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# FAUNA OF LAHORE.

## 4.—SPIDERS OF LAHORE

BY

SUKH DYAL, M.Sc. (Panjab).

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# 4. SPIDERS OF LAHORE

*by*

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## INTRODUCTION.

A collection of spiders for study was made during 1928-29 in Lahore from the following localities :—Gol Bagh, Lawrence Gardens, Lahore Cantonment, Model Town, Multan Road, Sanda Road, Banks of the river Ravi, Rakh Shahdara, Rakh Mahmud Buti, Dane Park, Baradari and Grand Trunk Road beyond Shahdara. The collection represents 20 families comprising 65 genera and 121 species. Of these 46 species are new to science. Sixteen of these new species belong to the Attidæ, a family which has hitherto received meagre attention in India. The family Attidæ, which has a cosmopolitan distribution and contains the largest number of genera and species, is represented in the present collection by 17 genera, most of which are now recorded for the first time from India. The family Lycosidæ is represented by 15 species and Argiopidæ by 12 species, whilst each of the remaining families mentioned in this paper is represented by fewer or a single species.

The majority of Lahore spiders are arboreal and spin webs, but those belonging to the families Oxyopidæ, Thomisidæ, and Attidæ, though arboreal, do not spin true webs. Thomisidæ are usually found on flowers and feed on insects visiting flowers. The families Urocteidæ, Pholcidæ and some members of Sicariidæ are house dwellers. Lycosidæ include the true ground spiders.

Feeding habits of spiders vary in different families. Lycosidæ, Prodidomidæ and Clubionidæ, while running, catch their prey. Oxyopidæ and Attidæ jump at their prey from a distance.

Majority of web-spinners enswathe their victims in silk before killing them. *Stegodyphus pacificus* and *Uroctea matthaii* loop their prey before feeding; the former sucks its prey before it is killed, whilst the latter drags the prey underneath the web after it has been looped outside. *Uroctea matthaii* feeds usually on ants. Mimetidæ are predatory spiders which do not spin webs, but live on other spiders and utilize their webs.

Remarkable cases of protective colouration are met with amongst spiders. *Hersilia savignyi* so closely resembles barks of trees that were it not for its movements it would be hardly

*Published 19th December*, 1935.

noticeable. Oxyopidæ usually simulate the green colour of foliage on which they live. The colouration of *Cyclosa* resembles the silvery grey colour of the devices spun by it, amongst which it takes up its position, to such an extent that it is very difficult to locate this spider. *Thomisus pugilis* imitates the colour of white and cream rose flowers amongst which it is usually found, thus deceiving both its enemies as well as its prey.

Striking cases of mimicry are provided by the genera *Lausus* and *Myrmarachne* which closely resemble ants, so that the enemies of spiders are scared away while the insects that approach them can be easily preyed upon.

Cocooning habits also vary in different families. Pholcidæ glue their eggs together and keep them in their cheliceræ till hatching. The majority of spiders spin cocoons and safely suspend them, the eggs hatching without any further parental care.

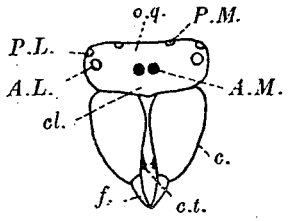
The Urocteidæ, Oxyopidæ, Attidæ, Thomisidæ and Sparassidæ guard their eggs till hatching. The Lycosidæ even carry the young ones on their backs for some days.

March to October are suitable months in Lahore for collection of spiders. In winter months (November to February) hibernating species can be obtained by digging and sifting the earth. For collecting alive spiders small pill boxes with rubber loop bands may be used. Spiders which can be caught by sweeping undergrowths with nets, ordinarily conceal themselves below stones and among roots of plants, etc. Those on tall bushes may be shaken down into an inverted umbrella. Underground spiders can be collected by digging the earth.

The best preservative for spiders is 70 per cent alcohol. It is not advisable to use higher strengths as they cause shrinkage, or bursting, of specimens. Mixtures containing glycerine, though useful for preserving colour, cannot prevent deterioration of specimens. Satisfactory microscopic preparations can be made in glycerine.

This work was mainly carried out in the Zoological Laboratory of the Government College, Lahore.

I am indebted to the Director of the Zoological Survey of India for the use of the Laboratory and Library of the Survey.

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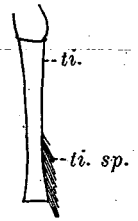


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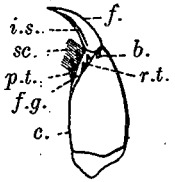


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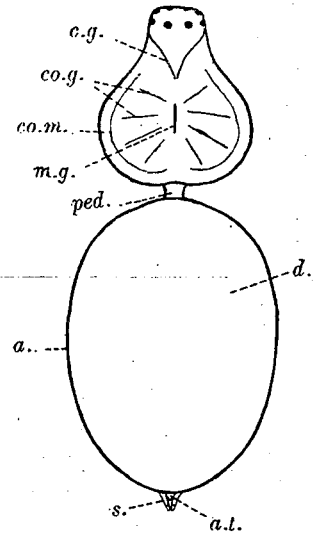


Fig. 1.

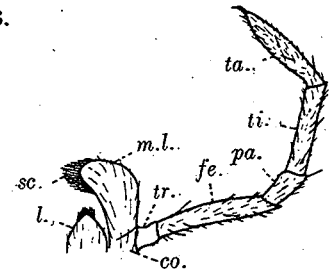


Fig. 4.

## TEXT-FIGURES.

Lettering employed—*a.*, abdomen; *A.L.*, anterior lateral eye; *A.M.*, anterior median eye; *a.t.*, anal tubercle; *b.*, boss; *c.*, chelicera; *c.g.*, cephalic groove; *c.t.*, cheliceral tooth; *cl.*, clypeus; *co.*, coxa; *co.g.*, corselet grooves; *co.m.*, corselet margin; *d.*, dorsum; *f.*, fang; *fe.*, femur; *f.g.*, fang groove; *i.s.*, inferior serrula; *l.*, labium; *m.l.*, maxillary lobe; *m.g.*, median longitudinal groove; *o.q.*, ocular quad; *pa.*, patella; *ped.*, pedicel; *P.L.*, posterior lateral eye; *P.M.*, posterior median eye; *p.t.*, promarginal tooth; *r.t.*, retromarginal tooth; *s.*, spinneret; *sc.*, scopula; *ta.*, tarsus; *ti.*, tibia; *ti. sp.*, tibial spur; *tr.*, trochanter.

Fig. 1. Dorsal view of spider.
Fig. 2. Front view of head of spider.
Fig. 3. Left chelicera of spider (promarginal view).
Fig. 4. Labium and maxillary palp of female spider.
Fig. 5. Tibia of *Uloborus*.



My thanks are due to Dr. A. C. Woolner, Vice-Chancellor of the Panjab University, for help received in naming the new species.

## SYSTEMATIC ACCOUNT.

The body of a spider consists of *cephalothorax* and *abdomen*, which are connected together by a *pedicel*. The cephalothorax is composed of an anterior *caput* or *cephalic region* and a posterior *thoracic region* between which are a pair of *cephalic grooves*. The cephalic region bears eyes which vary from 6 to 8 in number. Eyes are of two kinds, black or diurnal and white or nocturnal. They are homogeneous when only one type is present, heterogeneous when both types are present, and are usually arranged in two rows of four each. A row of eyes is recurved when the concavity is directed backwards, procurved when the concavity is turned forwards. According to the position they occupy, eyes are termed anterior medians, posterior medians, anterior laterals and posterior laterals. The part of cephalic region occupied by the eyes is known as *ocular area*, whilst that occupied by the four medians is termed *ocular quad*. The area between the anterior row of eyes and the chelicerae is known as *clypeus*.

The thoracic region otherwise known as the *corselet* has a *longitudinal groove* running along its mid-dorsal line. Other grooves known as *thoracic grooves* arise from the corselet margin near the legs and converge towards the median longitudinal groove. The part between the top of the corselet and pedicel is known as the *base of the corselet*.

The first pair of appendages of the cephalothorax are known as the *chelicerae*. Each chelicera bears at its apex a curved *fang* whose inner surface may be finely denticulated and has a groove along its inner surface where the fang can be closed. The groove itself may be guarded by teeth on each side, the edge of the groove away from the body is known as *promargin* and that adjoining the body is termed *retromargin*. The promargin may bear long, flexible hair, collectively termed *scopula*, which may be serrated or spathulate. The chelicerae may be soldered at their bases or free.

The *pedipalpi* form the second pair of appendages. Their bases are broad and cushion-shaped and are termed *maxillary lobes*. The dorsal surface of each maxillary lobe is furnished with a scopula which consists of long spathulate hair. A row of teeth known as *serrula*, is present at the apex of each maxillary lobe. The palp proper is composed of six segments, *coxa*, *trochanter*, *femur*, *patella*, *tibia* and *tarsus*. In the female the tarsus usually bears a monopectinate claw, whilst in the male the tarsus is devoid of any claw. The tarsus is hollowed inferiorly to accommodate the copulatory organ of the male known as the *palpal organ*. The latter in its simplest form consists of a swollen basal portion termed the *bulb*, an intermediate reservoir or *fungus*, and an apical portion known as the *style* or *ejaculatory duct*.

The part bounded in front by the pedipalpi and on the sides by the legs is known as *sternum*. A deep transverse suture is present on the sternum, demarcating a small anterior region known as *labium* from a large posterior region or the sternum proper. The labium is free when it is movably articulated to the sternum by means of a suture or soldered when the suture is absent.

Four pairs of legs are present in a spider. Each leg is composed of seven segments, *coxa*, *trochanter*, *femur*, *patella*, *tibia*, *metatarsus*, *tarsus*, and is furnished with spines, spinules, bristles and hairs of various types. Legs are designated I, II, III, IV according to their relative lengths. Each is provided with two or three claws which may be smooth, monopectinate (with a single row of teeth) or bipectinate (with two rows of teeth). Claws may be superior or inferior according to their relative position. In some families such as the Argiopidæ, apical inferior bristles of the tarsi become thickened, serrated and curved, when they are known as *spurious claws*. In some other families the tarsus, in addition to claws on its inferior margin, bears scopula, consisting of rows of thick hair. The scopula sometimes extends to the metatarsus. When the third claw is [illegible] its place is usually taken by spathulate hair known as

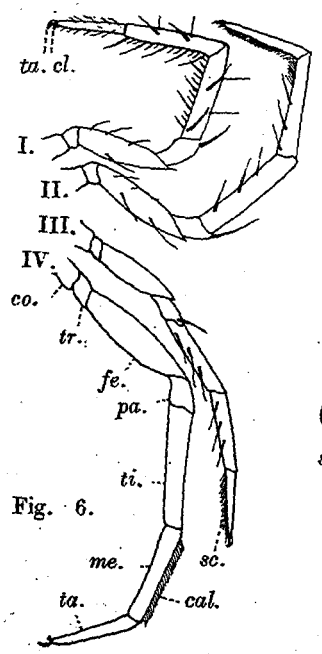

Fig. 6.

Fig. 9.

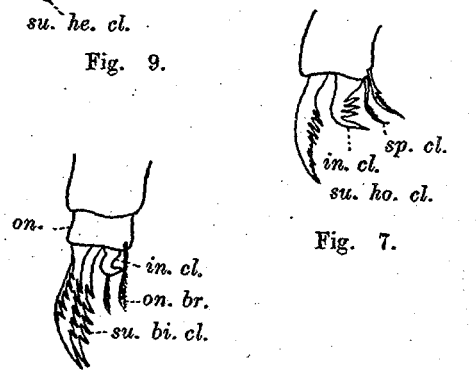

Fig. 8.

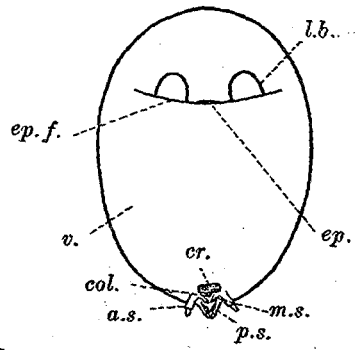

Fig. 10.



Fig. 7.

## TEXT-FIGURES.

Lettering employed—*a.s.*, anterior spinneret; *cal.*, calamistrum; *cl. t.*, claw-tufts; *co.*, coxa; *col.*, colulus; *cr.*, cribellum; *ep.*, epigynum; *ep. f.*, epigynal fold; *fe.*, femur; *in. cl.*, inferior tarsal claw; *l.b.*, lung-book; *me.*, metatarsus; *m.s.*, median spinneret; *on.*, onychium; *on. br.*, onychial brush; *pa.*, patella; *p.s.*, posterior spinneret; *sc.*, scopula; *sp. cl.*, spurious claw; *su. bi. cl.*, superior bipectinate claw; *su. he. cl.*, superior heterogeneous claw; *su. ho. cl.*, superior homogeneous claw; *ta.*, tarsus; *ta. cl.*, tarsal claws; *ti.*, tibia; *tr.*, trochanter; *v.*, venter.

Fig. 6. I. Anterior leg of Mimetid spider.
II, III. Legs of Lycosid spider.
IV. Leg of Cribellate spider.
Fig. 7. Apical end of tarsus of Argiopid spider.
Fig. 8. Apical end of tarsus of Scytodid spider.
Fig. 9. Apical end of tarsus of Attid spider.
Fig. 10. Ventral view of abdomen of spider.

*claw-tufts*, which may be short or long and have sticky function. They are also spoken of as *tenent hairs*, and Savory confuses them with scopulæ of the tarsi. In some genera an additional claw-bearing segment known as *onychium* is intercalated between the tarsus and claws. In some families metatarsus IV is furnished with a row of bristles termed *calamistrum*.

The abdomen is produced posteriorly into a conical structure known as the *anal tubercle*, and bears three pairs of *spinnerets* on the ventral surface. The spinnerets are provided with minute spinning tubes of which the larger are known as *spigots* and the smaller as *spools*. The first pair of spinnerets are referred to as the *anterior pair*, the second pair as the *median* and the third as the *posterior pair* of spinnerets. In some families there is a short, cylindrical structure between the anterior pair of spinnerets termed the *colulus*. In other families there is a sieve-like plate in front of the anterior pair of spinnerets, known as the *cribellum*, which may be divided or entire.

Venter of the abdomen is provided with two pairs of *lung-books*, or with a single pair of lung-books followed by one or two *spiracles*. The genital opening, which is minute in the male, lies between the lung-books. In the female the genital opening is known as *vulva* or *epigynum* and is usually surrounded by a chitinous plate. In the Argiopidæ epigynum is usually provided with an upright keel known as *scape*, which may be bent at a right angle.

*Key to families of spiders of Lahore :—

*a*. Two pairs of lung-books .. .. Theraphosidæ.
*b*. One pair of lung-books, followed by a spiracle.
  $a^1$. Eyes six .. .. Sicariidæ.
  $b^1$. Eyes eight.
    $a^2$. Tarsal claws three.

* Keys are provided only for families, genera and species described in this paper.

$a^3$. Cribellum and calamistrum present.
  $a^4$. Head broadly truncate in front.
    *P. L. remote from rest, cribellum divided .. .. Eresidæ.
  $b^4$. Head narrow, P. L. nearer, cribellum entire.
    $a^5$. Metatarsus IV curved, tibial spurs present .. .. Uloboridæ.
    $b^5$. Metatarsus IV straight, tibial spurs absent .. .. Dictynidæ.
$b^3$. Cribellum and calamistrum absent.
  $a^6$. Anal tubercle larger, two-jointed with a fringe of long hair .. Urocteidæ
  $b^6$. Anal tubercle normal.
    $a^7$. Posterior spinnerets longer .. Hersiliidæ.
    $b^7$. Posterior spinnerets normal.
      $a^8$. Cheliceræ soldered at base, tarsus of female palp without claw .. .. Pholcidæ.
      $b^8$. Cheliceræ free at base, tarsus of female palp with claw.
        $a^9$. Spurious claws present.
          $a^{10}$. Tarsus IV with comb of bristles .. .. Theridiidæ.
          $b^{10}$. Tarsus IV without comb.
            $a^{11}$. Tibiæ and metatarsi I and II with a pro-row of long spines .. Mimetidæ.
            $b^{11}$. Tibiæ and metatarsi without a pro-row of spines .. .. Argiopidæ.
        $b^9$. Spurious claws absent.
          $a^{12}$. Scopula present on legs.
            $a^{13}$. †A. L. stalked .. Pisauridæ.
            $b^{13}$. A. L. sessile .. Lycosidæ.

*P. L. refers to posterior lateral eyes.
†A. L. refers to anterior lateral eyes.



          $b^{12}$. Scopula absent on legs.. Oxyopidæ.
  $b^2$. Tarsal claws two.
    $a^{14}$. Eyes in three rows .. .. Attidæ.
    $b^{14}$. Eyes in two rows.
      $a^{15}$. Scopulæ present on anterior tarsi at least.
        $a^{16}$. Anterior pair of spinnerets wide apart.
          $a^{17}$. Cheliceræ with boss .. Drassidæ.
          $b^{17}$. Cheliceræ without boss .. Prodidomidæ.
        $b^{16}$. Anterior pair of spinnerets contiguous.
          $a^{18}$. Legs laterigrade .. Sparassidæ.
          $b^{18}$. Legs prograde .. Clubionidæ.
      $b^{15}$. Scopulæ absent from all tarsi .. Thomisidæ.

## FAMILY UROCTEIDÆ.

Cephalothorax transversely reniform; ocular group compact; mouth-parts weak; legs prograde. Posterior pair of spinnerets greatly elongated; anal tubercle bisegmented, provided with a fringe of hair laterally.

### GENUS *UROCTEA*.

1820. *Uroctea* Dufour, Ann. Sci. Phys., V, p. 198.
1893. *Uroctea*, Simon, Hist. Nat. Araign., I, p. 451.
1900. *Uroctea*, Pocock, Fauna Brit. Ind., Arach., p. 243.

This is the only recorded genus of the family. Spiders belonging to this genus are found under stones, in crevices and in corners of rooms in houses where they spin small saccular tent-like webs attached to the under-surface of stones by radially arranged bands of silk.

### 1. *UROCTEA MATTHAII* SP. NOV.

(Pl. XI, fig. 1 ; Pl. XII, figs. 11—17).

Cephalothorax is transversely reniform. Clypeus is as broad as long, oblique, its height being less than the width between the anterior median eyes (A. M.) and provided with a median conical projection. Eyes are in two slightly recurved rows. The medians are nearer to the laterals than to one another, with the result that the eyes appear to be arranged in two compact

groups. A. M. are wide apart, the intervening space being three times as much as their diameter. Anterior lateral eyes (A. L.) are nearer to A. M. The posterior lateral eyes (P. L.) are subcontiguous with the posterior median eyes (P. M.). P.M. are larger than all other eyes. P. L. are larger than A. M. but smaller than P. M. Cheliceræ are weak and soldered at their bases which are comparatively broad. Teeth and scopulæ are absent from the cheliceral groove. Fang is short and curved. Maxillary lobes are broader than long, with blunt inner margins, each having a dorso-anterior serrula internally; they are provided with long bristles at their inner margins; scopulæ are absent; the basal, dorsal and ventral surfaces of the maxillary lobes are provided with a compact group of curved bristles. Femur of the female palp is claviform; patella is short and spineless; tibia is short in male but long in female, with 2 or 3 spines. Tarsus of the male is longer than that of the female, with a spiral style bearing a broad lamina along its inferior surface. Tarsus of the female palp is provided with only a monopectinate claw. Sternum is cordate, truncate at the base, acuminate at the apex, and produced slightly between the posterior pair of coxæ. Legs are pale white or light brown in colour, and bear a few spines and numerous long bristles on both surfaces. Each tarsus possesses a pair of monopectinate superior claws, and a single inferior claw, bent, with only three teeth.

Abdomen is white or light brown, interspersed with deep brown markings, and bears a median brown cross-shaped sigilla. It is broadly ovate, rounded at the base, and is slightly attenuated posteriorly. The fovea of the vulva is covered by a trapezoidal plate which is broad at the base and produced into a mid-ventral spine. The epigynal region is marked with a rectangular chitin; posteriorly it is produced into a flask-shaped chitin. The anterior spinnerets are short and cylindrical, separated from each other by a median colulus. The posterior spinnerets are long, bisegmented, apical segment being long and acuminate. Median spinnerets are very slender. The anal tubercle is large, thick and bisegmented. The apical segment is provided with a lateral fringe of long flexible hair.



Average length :—3 mm.

This spider spins the usual type of web in corners of houses; 50—80 eggs are laid at a time by the female in the web. Eggs are guarded by the female till the time of hatching. Spiderlings disperse after the first moult. The female feeds only occasionally during the period of incubation.

The previously known species of this genus are represented by large spiders. The vulval plate shows specific differences: in *U. septonotata* Tucker it is transverse, with two lateral, diverging sinuous lines or slits, in *U. quinquenotata* Simon it is transverse, pentagonal, with a semi-circular notch at the posterior end. *U. compactilis* Karsch has a broad brown patch on the dorsum. The only Indian species of this genus is *U. indica* Pocock which has a transversely elliptical epigynal plate impressed behind with a small circular pit and marked with nearly semi-circular grooves in front. *U. matthaii* differs from *U. indica* in size, dorsal markings and in the colour of the abdomen.

*Localities :—Houses in Lahore.

## FAMILY HERSILIIDÆ.

Cephalothorax broader than long; clypeus broad, inclined forwards; eyes situated on a prominence; thoracic grooves deep; cheliceræ feeble; legs long. Abdomen slightly convex; posterior spinnerets longer than abdomen, bisegmented, apical segment provided with a row of spigots along inner surface.

These spiders are mainly arboreal in their habits, but may be found on walls and under stones. They spin scanty webs on trunks of trees, and are fast runners. Their colour resembling the bark of trees affords protection against enemies.

### GENUS *HERSILIA*.

1826. *Hersilia* Audouin, Sav. Descr. Egypte, Arch., p. 114.
1892. *Hersilia*, Simon, Hist. Nat. Araign., I, p. 446.
1900. *Hersilia*, Pocock, Fauna Brit. Ind., Arach., p. 241.

Head depressed; ocular quad rectangular; metatarsi of legs I, II, IV, bisegmented.

*The author has obtained specimens of *U. matthaii* from Mansahra (5,000 ft.) and from Calcutta.

## 2. *HERSILIA SAVIGNYI* Lucas.

(Pl. XII, figs. 18—21).

1836. *Hersilia savignyi* Lucas, Mag. Zool. 6 annee, classe VIII, p. 10.
1869. *Hersilia calcuttensis*, Stoliczka, J. Asiat. Soc. Beng., XXXVIII, p. 216.
1892. *Hersilia savignyi*, Simon, Hist. Nat. Araign., I, p. 448.
1895. *Hersilia savignyi*, Thorell, Spiders of Burma, p. 56.
1900. *Hersilia savignyi*, Pocock, Fauna Brit. Ind., Arach., p. 241.
1919. *Hersilia savignyi*, Sheriffs, Ann. Mag. Nat. Hist., (9), 4.
1922. *Hersilia savignyi*, Gravely, J. Bombay Nat. Hist. Soc., XXVIII, 4.

Cephalothorax is longer than broad, rounded in front and on the sides; head is separated from the thoracic region by being elevated and by the thoracic grooves. Eyes are in two rows of four each, the laterals being smaller than the medians. Sides of ocular quad are parallel. Cheliceræ are slender, each bearing three teeth on the retromargin; they are not soldered at the base as in *Uroctea*; boss is absent. Fang is long and curved. Maxillary lobes are longer than broad, being broader at the apex; they are scopulated, and each bears a submarginal anterior serrula. Tarsus of the female palp is provided with a monopectinate claw. Legs are I, II, IV, III. They are long and slender and their metatarsi are bisegmented, except that of III.

Abdomen is broadly oval, rounded at the base, broader posteriorly. Vulva is bilobed, the lobes being separated by deep emargination.

Colour of body is variable from pale to deep brown. The dorsum has a black rim, transverse stripes and a median black bar. The local forms are lighter than those collected from Calcutta and Mansahra. Legs and palpi are also banded.

The male is slenderer than the female; the patella of its palp is strongly dilated and is provided with a conspicuous internal prominence which is perpendicular in position, and is conical and hairy.

Average length :—Female, 10 mm.
Male, 7 mm.

Localities :—Lawrence Gardens.



*Also recorded from Bellary, Thanna, Matheran, Poona, Nilgiri Hills, Travancore, Allahabad (Pocock); Calcutta (Stoliczka); Burma (Thorell).

## FAMILY ERESIDÆ.

Cephalothorax thick and broad; both median and lateral eyes arranged in separate quadrilaterals; frontal marked with a red triangle divided by a median white streak; metatarsi of legs IV provided with calamistrum. Abdomen very heavy, overhanging cephalothorax; cribellum thick, transversely divided.

## GENUS *STEGODYPHUS*.

1873. *Stegodyphus* Simon, Ann. Soc. ent. Fr., 5e, III, p. 367.
1892. *Stegodyphus*, id, Hist. Nat. Araign., I, p. 253.
1900. *Stegodyphus*, Pocock, Fauna Brit. Ind., Arach., p. 208.

Cephalic region large, rounded, high; P. L. remote from other eyes; A. L. situated at the edge of clypeus, forming a trapezoid with P. L.; trapezoid formed by medians narrower in front; clypeus low; mandibles flat in front, fang groove scarcely toothed; maxillæ convergent; legs strong, spiny. Abdomen oval; anterior pair of spinnerets thick; cribellum divided transversely into two.

All known members of this genus are arboreal in habit, some of them being also social.

Key to species :—

*a*. Dorsum uniformly bronze black. .. *S. mirandus.*
*b*. Dorsum only banded with black.
*a*1. Spiders upto 12 mm. in length .. *S. sarsinorum.*
*b*1. Spiders more than 12 mm. in length .. *S. pacificus.*

## 3. *STEGODYPHUS SARSINORUM* Karsch.

(Pl. XII, figs. 22—26).

1892. *Stegodyphus sarsinorum* Karsch, Ent. Z. Berlin, XXXVI, p. 275.
1900. *Stegodyphus sarsinorum*, Pocock, Fauna Brit. Ind., Arach., p. 209.

* Specimens of this species were collected by the author at Mansahra (5,000 ft.).

Cephalothorax is longer than broad; cephalic region is higher than the thoracic. Frontal is triangular in shape, of brick red colour, divided perpendicularly by a median white streak. Ocular quad is as broad as long, broader posteriorly. The trapezoid formed by the lateral eyes is much broader in front. Chelicerae are dark, swollen at the base, somewhat attenuated and obliquely truncate towards the anterior end. Fang groove bears a single tricuspid tooth. Maxillary lobes are longer than broad, convergent; serrula is located at the anterior margin. Tibia of the female palp is as long as the patella; tarsus is twice as long, and bears short thick spines ventrally and a monopectinate apical claw. Labium is triangular, broad at the base, narrow and obtuse apically, exceeding the middle of the maxillary lobes. Legs are short and thick, dull white banded with black, and thickly covered with brown hair; spines are short. Tarsi are truncate apically.

Abdomen is oblong, highly convex, overhanging the cephalothorax. It is dull white and is ornamented with a pair of dark brown, irregular, posteriorly converging bands, and an outer narrower band of the same colour on each side. Spinnerets are situated ventro-posteriorly; the anterior pair is short and thick, whilst the posterior pair is shorter and slender. Cribellum is transversely rectangular and bilobed.

Male specimens have not been found.

Average lengths:—8 and 11·5 mm.

Localities:—Sanda Road, Grand Trunk Road beyond Shahdara.

Also recorded from Ceylon, Travancore, Bangalore, Chingleput, Bilaspur, Poona, Uran (Pocock); Calcutta, Berkuda Islands (Gravely).

These spiders are social in their habits. They spin a labyrinthine tube which ends blindly at one end, the opposite end expands into a broad sheet resembling the sheet (which however is smaller) spun by the genus *Hippasa*.

There are two varieties of *S. sarsinorum* obtained from two different localities. The larger variety from Sanda Road is



11·5 mm. in length. Of the 10 specimens 9 were caught on one occasion; its cocoon, which is discoidal, measures 7·5 mm. in diameter.

The smaller variety is common on trees on the banks of the river Ravi and along the Grand Trunk Road beyond Shahdara. The average length of this variety is 8 mm. and its cocoon measures 5 mm. in diameter. It spins a large sheet web 12 feet across. Gravely regarded this form as *S. sarsinorum*, the larger variety being unrepresented in the Indian Museum, although Pocock referred to specimens 10 mm. long.

This species does not sting the prey to death, but feeds on the captive while alive, all members of the colony sharing the same victim. Spiderlings hatch out in the month of October and feed on their parents, hibernating in web-tubes in winter.

### 4. *STEGODYPHUS MIRANDUS* Pocock.

1899. *Stegodyphus mirandus* Pocock, J. Bombay Nat. Hist. Soc., XII, p. 750.
1900. *Stegodyphus mirandus* Pocock, Fauna Brit. Ind., Arach., p. 209.

This species differs from *S. sarsinorum* in colour and size. Its cephalothorax is black and iridescent. The sternal and coxal hair are yellowish brown. The first pair of legs are thicker than the others and are bronze black in colour.

Abdomen is oblong, convex, bronze black above, rich golden laterally and ventrally. Spinnerets are black.

Length:—Female, 20 mm.

Localities:—Rakh Mahmud Buti.

Also recorded from Bombay, Uran, Poona Ghat (Pocock).

The only specimen of this species was found in a silken tubular retreat without an outer sheet or fisherman's net. It resembles *S. socialis* in colour but is much larger.

### 5. *STEGODYPHUS PACIFICUS* Pocock.

(Pl. XI, fig. 2).

1900. *Stegodyphus pacificus* Pocock, Fauna Brit. Ind., Arach., p. 209.

This species attains to the same size as the previous one. The colour of the dorsum is as in *S. sarsinorum* but varies much

in regard to pattern. It is marked with a pair of irregular longitudinal blackish bands, on each side of which is a narrow band of the same colour. The integument is usually yellowish red, covered with greyish hair. Legs are banded with black. In none of the specimens examined the ventral surface is black as stated by Pocock, but nearly all possess a pair of well-marked or faintly yellowish ventro-lateral bands. Chelicerae are blackish at the tips and covered with white pubescence anteriorly.

Colouration is liable to vary much. The general colouration and bands of the dorsum may become faint, or even disappear so that the dorsum becomes absolutely white without any bands. Venter is always greyish white. The dark bands may disappear from all the legs except the anterior pair.

Length :—Female, 20 mm.

Localities :—Lahore Cantonment.

Also recorded from E. Khandesh, E. districts of Poona (Pocock).

These are solitary spiders. Each spins a single blind tube which expands at its outer end into a broad fisherman's net. Webs are always found on low bushes and some of the lines may frequently touch the ground. The victim is looped by the spider but not killed.

## FAMILY PISAURIDÆ.

Cephalothorax oval, marked with definite cephalic grooves and a median longitudinal streak; eyes arranged in two transverse rows, anterior row varying in curvature in different genera, eyes of posterior row procurved, being larger than those of anterior row; chelicerae long and toothed; legs long, unequal, spines numerous, irregularly scattered, tarsi slender, flexible; onychii with isolated bristles and scopulæ.

These spiders spin huge sheet-webs on bushes; each sheet-web is prolonged into a tube at the far end.

### GENUS *EUPROSTHENOPS.*

1897. *Euprosthenops* Pocock, Ann. Mag. Nat. Hist., (6), 19, p. 110.
1898. *Euprosthenops*, Simon, Hist. Nat. Araign., II., p. 291.
1900. *Euprosthenops* Pocock, Fauna Brit. Ind., Arach., p. 249.



Cephalothorax low, facial area inclined; A. L. stalked on edge of clypeus, ocular quad longer than wide, narrower in front, posterior eyes larger than anteriors; fang groove with three teeth on retromargin; tarsi short and rigid.

### 6. *EUPROSTHENOPS ELLIOTI* (Cambridge).

1877. *Podophthalma ellioti* Cambridge, Proc. Zool. Soc. London, p. 567.
1900. *Euprosthenops ellioti*, Pocock, Fauna Brit. Ind., Arach., p. 249.

Cephalothorax of the female is longer than broad, pale yellow and marked with a median dark band which is bounded by silvery white pubescence. Cephalic grooves are very prominent. Head is inclined forward. A median longitudinal thoracic groove is present. Eyes of the anterior row are greatly procurved, medians are nearer to one another than to the laterals. Eyes of the posterior row are strongly recurved. Ocular quad is longer than broad and wider posteriorly. Legs are IV, I, II, III, long, bearing numerous scattered spines with red bases, and are covered with olive brown hair interspersed with white; femora are spotted.

Abdomen is long, nearly $3\frac{1}{2}$ times as much as its breadth, broad at the base and attenuated posteriorly as in the Oxyopidæ. Its colour is dark brown above, with a median lanceolate band in the anterior half bounded by a yellow band on each side. Venter is covered with golden yellow hair.

Length :—Female, 21 mm.

Localities :—Model Town.

Also recorded from Chingleput (Pocock).

## FAMILY LYCOSIDÆ.

Cephalothorax high, narrower in front; eyes of anterior row small, forming straight or slightly curved line, eyes of second row recurved to such an extent as to appear in two rows; legs prograde, legs III shorter than others, claw-tufts absent; chelicerae with boss. Cocoon carried by female attached to her spinnerets.

These spiders, commonly called the hunting or wolf spiders, are very fast runners. They catch their prey on foot. Only a few genera of this family such as *Hippasa* spin a tubular retreat which expands externally into a broad sheet. Other members of the family dig a tubular tunnel or make use of small crevices in the ground. The young on hatching, are carried about by the mother on her back for some time.

Key to genera :—

*a*. Front row of eyes straight.
  $a^1$. Legs long, each pair of tibial spines extending beyond base of succeeding pair .. *Pardosa*.
  $b^1$. Legs short, each pair of tibial spines not reaching base of succeeding pair .. *Lycosa*.
*b*. Front row of eyes curved.
  $a^2$. Sternum with black median band .. *Hippasa*.
  $b^2$. Sternum without black median band.
    $a^3$. Anterior row of eyes slightly recurved .. .. *Ocyale*.
    $b^3$. Anterior row of eyes procurved .. *Anomalomma*.

## GENUS *LYCOSA*.

1804. *Lycosa* Latrielle, Nouv. Dict. d'Hist. Nat., XXIV, p. 135.
1880. *Tricca*, Simon, Ann. Soc. ent. Fr., p. 250.
1898. *Lycosa*, Simon, Hist. Nat. Araign., II, p. 345.
1900. *Lycosa*, Pocock, Fauna Brit. Ind., Arach, p. 252.
1908. *Brevilabus*, Strand, Arch. Naturgesch. Berlin, p. 54.
1908. *Xerolycosa*, Dahl, Halle Nova Acta Leop., LXXXVIII, p. 201.
1924. *Lycosa*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 588.

Cephalothorax highest in cephalic region, sides of caput moderately oblique; first row of eyes narrower than second, never separated by more than $1\frac{1}{2}$ times their diameter; cheliceræ strong, twice as long as height of frontals; legs with short spines, tibia II with three pairs of ventral spines.

Key to species :—

(Females).

*a*. Epigynal plate divided.
  $a^1$. Median epigynal piece present .. *L. bistriata*.
  $b^1$. Median epigynal piece absent .. *L. Arorai*.



*b*. Epigynal plate single.
  $a^2$. Epigynal plate circular.
    $a^3$. Length of body upto 6 mm. .. *L. mackenziei*.
    $b^3$. Length of body more than 6 mm. .. *L. kempi*.
  $b^2$. Epigynal plate not circular.
    $a^4$. Epigynal plate cordate .. *L. Basiri*.
    $b^4$. Epigynal plate not cordate.
      $a^5$. Epigynal plate horse-shoe-shaped *L. chaperi*.
      $b^5$. Epigynal plate T-shaped .. *L. madani*.

(Males).

*a*. Femur of palp white .. .. *L. birmanica*.
*b*. Femur of palp black .. .. *L. kempi*.
*c*. Colour of palp olive-brown .. .. *L. Basiri*.

As *L. wroughtoni* is represented by only an immature specimen it has not been included in the key.

### 7. *LYCOSA CHAPERI* Simon.

(Pl. XII, figs. 27-30).

1885. *Lycosa chaperi* Simon, Bull. Soc. zool. Fr., X, p. 8.
1885. *Lycosa chaperi* Simon, Bull. Soc. zool. Fr., X, p. 458.
1900. *Lycosa chaperi*, Pocock, Fauna Brit. Ind., Arach., p. 254.

Cephalothorax is as long as abdomen, narrower anteriorly, slightly emarginate posteriorly, and bears a black median stripe in the thoracic region. Eyes of the front row are in a straight line, and are smaller than those of the second row; medians are larger than laterals; P. M. are wide apart, and form a row which is broader than the front row; P. L. are smaller than P. M., shifted so far back that they form another row broader than the second row; ocular quad is longer than wide and narrower anteriorly. Clypeus is broader than the distance between the anterior median eyes. Cheliceræ are twice as long as broad, acuminate anteriorly. Maxillary lobes are twice as long as broad, broadest just above the middle and convergent; serrula is short and submarginal. Labium is short, with parallel sides and broadly truncate at the

apex. Sternum is ovate, truncate at the base, and pointed apically; it is olive brown in colour. Each tarsal claw of the superior pair is provided with 6 teeth, inferior claw is smooth.

Abdomen is oblong, more than three times as long as broad; it is olive brown in colour with longitudinal black streaks. Venter is somewhat brown. The vulval aperture is covered with a horse-shoe-shaped epigynal plate which is produced into a median keel. The spinnerets are very small and subequal.

Average length :—13·5 mm.

Localities :—Common in Lahore.

Also recorded from Wagara-Karoor near Guntakal, Bellary district (Pocock).

These spiders are found under decaying leaves below straggling bushes. They shun light. The cocoon is circular, and white in colour.

### 8. *LYCOSA BIRMANICA* (Simon).

(Pl. XIII, figs. 36-37).

1884. *Pardosa birmanica* Simon, Ann. Mus. Stor. nat. Genova, XX, p. 333.
1890. *Lycosa ipnochœra*, Thorell, Ann. Mus. Stor. nat. Genova, XXX (ser 2*a*, x), p. 138.
1892. *Lycosa ipochœra*, Thorell, Ann. Mus. Stor. nat. Genova, XXXI (ser 2*a*, xi), p. 176.
1895. *Lycosa birmanica*, Thorell, Spiders of Burma, p. 242.
1924. *Lycosa birmanica*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 607.

Cephalothorax is longer than broad, narrow anteriorly, the highest region being between the second and third rows of eyes; median longitudinal stripe, cephalic grooves and corselet grooves are absent. Its colour is dark brown fading from reddish brown to pale at the top. Clypeus is twice as long as the distance between A. M. Maxillary lobes are longer than wide, narrow and rounded at the base. Femur of the male palp bears two median and a pair of apical black spines; patella has only a single basal pair; tibia, which is slightly longer than patella, is provided with one or two spines; tarsus is spineless, longer than the femur, nearly three-fourths of its basal part being occupied by the palpal organ; bulb is voluminous and bears a long and spiral style. In the male palp tarsal claw



is represented by a black, chitinous spine-like structure. Colour of the male palp is black up to the apex of femur, which is covered with white hair as over the base of tarsus, the remainder of the tarsus being black. Coxæ of legs are equal in length; trochanters are deeply notched; femora II only bear dorsal spines; patellæ are spineless, metatarsi bear three pairs of long spines as seen in the genus *Pardosa*; metatarsus IV in female is equal to, or slightly shorter than, patella and tibia combined, but is longer in the male; superior tarsal claws bear 7-9 teeth. Legs are brown, banded with black.

Abdomen is oblong, dark brown, with two rows of grey spots converging posteriorly. Anterior pair of spinnerets are longer than the posterior pair, their apical segments are narrower than the basal ones.

Average length :—Male, 5 mm.

Localities :—Common in Lahore.

Also recorded from Southern, Eastern and Central India (Gravely).

These spiders are commonly seen in open, moist places, where there are fissures for concealment.

### 9. *LYCOSA BASIRI* SP. NOV.

(Pl. XIII, figs. 31-35).

Cephalothorax is longer than broad, narrower anteriorly, with gradually sloping sides. Its colour is pale orange, with a median black thoracic streak bounded laterally by light brown crescentic patches; margin of the corselet is black. Cephalic region is slightly higher. The first row of eyes is straight, nearly subcontiguous, medians being slightly larger than the laterals; eyes of the second row are larger than others; ocular quad is much wider than long, considerably narrow anteriorly. Cheliceræ are of the usual type. Maxillary lobes are broadly club-shaped, with slightly concave inner surface; serrula is anterior and submarginal as in *L. chaperi*. Femur of the palp bears three curved spines, patella has only a single apical spine, tibia and tarsus are spineless, tarsus is thickly hairy. Sternum

is dark brown in colour, cordate, truncate at the base and pointed at the apex. Anterior femora of legs are very spiny, each tibia bears two pairs of lateral and a pair of dorsal spines; each metatarsus has three pairs of ventral spines as is usually the case. Superior claws bear 4—8 teeth. Legs are pale yellow, banded with brown.

Abdomen is oval, light grey, ornamented with black spots. Venter is uniformly dull grey. Fovea of the vulva is covered by a cordate plate, produced into a median projection at the posterior cleft.

Males are much smaller in size, their cephalothorax is olive-brown, sternum deep red. Abdomen is similar to that of the female, but is lighter in colour.

Average length :—Female, 7 mm.

Male, 5 mm.

Locality :—Ploughed fields in Lahore.

### 10. *LYCOSA BISTRIATA* Gravely.

1924. *Lycosa bistriata* Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 600.

Cephalothorax is longer than broad, slightly narrow in front, rounded on the sides and emarginate posteriorly. It is pale orange in colour with a median black stripe on the thoracic prominence and a pair of broad lateral bands, brown in colour, extending upto the pedicel. The anterior row of eyes is straight, medians are slightly larger than the laterals and nearer to A. L. than to one another ; eyes of the second row are larger than others, the row being as long as the first ; the third row of eyes is much longer, eyes being smaller than P. M. ; ocular quad is twice as wide as long. Clypeus is narrower than the distance between A. M. Chelicerae are very long, convex, densely covered with hair ; fang is short ; promargin bears three, instead of two, teeth as in other species of *Lycosa*. Femora of maxillary palps are claviform, patellæ are equal to tibiæ, tarsi are long but shorter than femora and each bears a monopectinate claw. Labium is long, truncate both basally and apically, rounded laterally in the anterior half. Sternum is cordate. Legs are pale, shorter in the female. Tibia and tarsus I bear each three ventral spines ; each superior claw has five teeth.



Abdomen is pale, marked with a median lanceolate band in the anterior half ; lateral bands are darker ; integumentary hair are yellowish. Venter is pale with greyish white hair. Epigynal plate is triangular, divided in the middle by a median piece.

Average length :—Female, 16 mm.

Localities :—Gol Bagh.

Also recorded from Bengal, Madras and Mysore (Gravely).

### 11. *LYCOSA MACKENZIEI* Gravely.

(Pl. XIII, figs. 38-39).

1924. *Lycosa mackenziei* Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 606.

This species closely resembles *L. sumatrana* in its general colouration. Markings on the thoracic region resemble those of *Lycosa bistriata.* Sternum is oval, slightly truncate in front and pale white in colour. Chelicerae are coloured deep orange, each bears three teeth on the retromargin and two on the promargin of the fang groove. Maxillary lobes are longer than wide, very broad at the apex, slightly convex, rounded laterally ; serrula is submarginal ; femur of the palp has three median dorsal spines, tibia bears a single pair of spines, patella with a single median basal and a pair of lateral spines, metatarsus with three median and one apical ventral spine. Tarsi of all legs are scopulated.

Abdomen is oblong, pale yellow clouded with brown patches. A median basal lanceolate band extends upto two-fifths of the length of the abdomen, laterally three pairs of yellow spots are present followed by two transverse spots of the same colour ; all spots are dotted with black. Epigynal plate is broadly rounded with a deep triangular notch at the posterior end. Posterior spinnerets are slightly longer than the anterior pair.

Average length :—Female, 6 mm.

Localities :—Common in Lahore.

Also recorded from Bangalore, Siripur, Saran, Dinapore and Calcutta (Gravely).

## 12. *LYCOSA MADANI* Pocock.

1901. *Lycosa madani* Pocock, J. Bombay Nat. Hist. Soc., XIII, p. 486.
1924. *Lycosa madani*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 602.

Cephalothorax is longer than broad, narrower in front, rounded on the sides and truncate posteriorly. The median black streak lies farther behind than in any other species ; lateral bands are faintly visible. First row of eyes is straight, medians are larger than the laterals, second row of eyes is as long as the first, third row of eyes is longer. Clypeus is very low. Cheliceræ bear each four teeth on the retromargin and only two on the promargin. Maxillary lobes are longer than wide, broad and converging at the apex and have convex outer margins. Tibia is the only segment of the palp that bears spines. Tarsus of female palp is densely covered with hair. Labium is squarish, slightly emarginate anteriorly. Sternum is cordate and bears several black bristles. Tarsi of legs are scopulated, but spineless ; superior tarsal claws bear seven teeth each.

Abdomen is pale yellow in colour variegated with brown ; base of the dorsum bears a yellow band. Fovea of the vulva is covered with a T-shaped epigynal plate.

Average length :—Female, 9·5 mm.
Localities :—Common in Lahore.
Also recorded from E. Khandesh (Pocock).

## 13. *LYCOSA ARORAI* SP. NOV.

(Pl. XIII, figs. 40-41).

Cephalothorax is longer than broad, head is not clearly marked off from the thoracic region, being highest behind the ocular area ; cephalothorax is pale yellow or reddish brown in colour, median longitudinal streak and corselet grooves are very faintly marked, margin of the corselet is black. The front row of eyes is straight, medians being slightly larger than the laterals ; second row of eyes is shorter than the first, P. L. are wide apart. Cheliceræ are dark brown, broad at the base, convex above, slightly narrow apically ; retromargin is toothless while the promargin bears three teeth. Maxillary lobes are broadly club-shaped,



convergent, each scopulated on the inner margin of its anterior half ; femur of the palp bears three dorsal spines, other segments are spineless, tarsus bears a curved smooth claw. Tarsus of male palp is curved, style of bulb is very short. Femur of leg I bears dorsal spines, patella is spineless, tibia and metatarsus bear three pairs each of ventro-lateral spines ; superior tarsal claws are provided with six teeth each.

Abdomen is light brown, oblong, slightly pressed, base of the dorsum bears a square pale yellow or white patch posteriorly interspersed with dark brown hair, and a row of median black dots. Fovea is bounded by two lateral triangular plates with rounded angles ; each plate has a circular depression in the centre. Spinnerets are equal in length, but the posterior pair is slenderer than the anterior pair.

Average length :—Male 7·5 mm.
Locality :—Gol Bagh.

## 14. *LYCOSA KEMPI* Gravely.

(Pl. XIII, fig. 42).

1924. *Lycosa kempi* Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 602.

This species very closely resembles *L. madani* in its general colouration and markings. First row of eyes is straight, medians are nearer to laterals than to one another. Sternum is circular with an emarginate base.

The only features which separate this species from *L. madani* are the unusually long leg spines and watch-glass-shaped median piece of the vulval plate.

Palpal tarsi of males are black.

Average length :—Female, 18 mm.
Male, 9·5 mm.

Localities :—Lawrence Gardens.

Also recorded from Darjeeling, Assam, Bhutan and Simla (Gravely).

### 15. *LYCOSA WROUGHTONI* Pocock.

1899. *Lycosa wroughtoni* Pocock, J. Bombay Nat. Hist. Soc., XII, p. 751.
1900. *Lycosa wroughtoni* Pocock, Fauna Brit. Ind. Arach., p. 253.

Cephalothorax is deep brown, with a median yellowish brown band; marginal streaks are present. Cephalic region is low, almost level with the thoracic region. A. M. are slightly larger than A. L., being equally spaced from each other; eyes of second row are as large as those of first row. Cheliceræ are black, covered with bright orange-coloured hair. Clypeus is narrow, hardly exceeding the space between A. M. Sternum is black, cordate, convex, truncate at the base, slightly broader than long. Maxillary lobes are twice as long as the length of the labium, broad, rounded apically, convergent; the femoral joint is slender; tarsus of the palp is infuscate below. Femora of legs are dark brown below, with black apices.

Abdomen is black below, whitish laterally, yellowish above, with a black anterior median and dark brown lateral bands, posteriorly covered with greyish hair.

Length :—Female immature, 14 mm.
Localities :—Gol Bagh.
Also recorded from Bulsar in Guzerat (Pocock).

## GENUS *HIPPASA*.

1885. *Hippasa* Simon, Bull. Soc. zool. Fr., X, p. 31.
1898. *Hippasa* Simon, Hist. Nat. Araign, II, p. 326.
1900. *Hippasa*, Pocock, Fauna Brit. Ind., Arach., p. 249.

Anterior row of eyes wider than second, posterior eyes more widely separated. Posterior spinnerets considerably longer than the anteriors.

### 16. *HIPPASA AGLENOIDES* (Simon).

(Pl. XIII, figs. 49—52).

1884. *Pirata aglenoides* Simon, Ann. Mus. Stor. nat. Genova, XX, p. 334.
1895. *Hippasa aglenoides*, Thorell, Spiders of Burma, p. 218.
1900. *Hippasa aglenoides*, Pocock, Fauna Brit. Ind., Arach., p. 251.
1924. *Hippasa aglenoides*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 594.



Cephalothorax is brown, longer than broad and highest in the region of second row of eyes; cephalic region is higher than the thoracic. Eyes of the front row are slightly procurved and equal; eyes of the second row are largest; ocular quad is wider than long and narrow anteriorly. Clypeus is nearly twice the space between A. M. Cheliceræ are reddish brown in colour, highly convex near the apex, the retromargin of each chelicera bears three teeth while the promargin has only two teeth. Labium is longer than broad and reaches the middle of the maxillary lobes. Sternum is circular, fawn-coloured with a median black band. Legs are pale yellow, banded with black and covered with white hair; posterior pair of coxæ are thicker than the rest, trochanters are notched, tibiæ and metatarsi of legs I bear three pairs of ventral spines each.

Abdomen is oblong, densely mottled with brown, deep brown and grey hair above and a narrow black band on each side below. Vulva forms a vertical archway whose posterior border is transversely truncate.

Length :—10 mm.
Localities :—Fields and Gardens.
*Also recorded from Burma, Minhalla (Thorell); Parambikulam, Malabar and Gular (Gravely).

### 17. *HIPPASA PISAURINA* Pocock.

(Pl. XIII, fig. 48).

1900. *Hippasa pisaurina* Pocock, Fauna Brit. Ind., Arach., pp. 250-251.
1924. *Hippasa pisaurina*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 595.

This species differs from *H. aglenoides* in being of a lighter colour. The eyes of the anterior row are very unequal in size, A. M. being twice the size of the laterals.

Abdomen is white below and does not bear the narrow black bands seen in *H. aglenoides*. Vulva forms a vertical archway but the posterior border is triangularly pointed.

Length :—11 mm.
Localities :—Common in Lahore.

* Specimens of this species were collected by the author at Mansahra (5,000 ft.).

Also recorded from E. Khandesh, E. Poona, Bangalore (Pocock); Siripur, Saran, Bihar (Gravely).

## GENUS *PARDOSA*.

1848. *Pardosa* Koch, Die Arachniden, XIV, p. 99.
1848. *Leimonia*, Koch, Die Arachniden, XIV, p. 100.
1890. *Passiena*, Thorell, Studi Ragni Mal, e Pap., IV, p. 140.
1908. *Hygrolycosa*, Dahl, Halle Nova Acta Leop., LXXXVIII, p. 197.
1908. *Acantholycosa*, Dahl, Halle Nova Acta Leop., LXXXVIII, p. 197.
1924. *Pardosa*, Gravely, Rec. Ind. Mus. Calcutta, XXVI, p. 609.

Second row of eyes broader than first row. Spines of legs long; tibial spines very long, their apices extending beyond bases of succeeding pair of spines; metatarsus IV longer than patella and tibia combined.

Key to species:—

*a*. Epigynal plate single .. .. *P. Mulani.*
*b*. Epigynal plate divided.
  $a^1$. Epigynal pieces triangular .. *P. lahorensis.*
  $b^1$. Epigynal pieces linear .. .. *P. leucopalpis.*

### 18. *PARDOSA LEUCOPALPIS* Gravely.

1924. *Pardosa leucopalpis* Gravely, Rec. Ind. Mus. Calcutta, XXVI, pp. 610-611.

Cephalothorax is pale yellow, with a median longitudinal streak and brown lateral bands. Cephalic region is not clearly separated from the thoracic region. The first row of eyes is straight, medians slightly larger than the laterals; second row of eyes is longer than the first row; ocular quad is broader than long, narrower anteriorly. Clypeus is very low. Sternum is cordate, acuminate at the apex, and produced between the posterior pair of coxæ. Legs are long and slender, pale yellow; trochanters are notched and bear numerous spines; tibia I has three pairs of spines; metatarsus I is provided with three pairs of spines; tarsal claw bears four teeth only.

Abdomen is oblong, broadest behind the anterior half, narrowing posteriorly. It is pale yellow in colour, with dark brown hair. Vulval plate is O-shaped, with a median tongue-like process arising from the anterior end.



Male differs from the female in having palpal, tibial and tarsal joints covered with thick whitish pubescence.

Average length :—6·5 mm.

Localities :—Grassy plots in Lahore.

Also recorded from Madras and Berkuda Islands (Gravely).

### 19. *PARDOSA LAHORENSIS*. SP. NOV.

(Pl. XIII, figs. 43-44).

Cephalothorax is longer than broad, narrower anteriorly; thoracic region is as high as the cephalic region; the median longitudinal groove and cephalic grooves are faintly developed; black lateral thoracic bands start from behind the third pair of eyes and end in the middle of the corselet; bands are attenuated antero-posteriorly and are bounded laterally by white streaks; margin of the corselet is lined with black. Front row of eyes is straight, eyes are sub-equal; second row of eyes is longer than the first row; ocular quad is wider than long and wider posteriorly. Clypeus is narrower than the distance between A. M. Sternum is cordate, pale white. Cheliceræ are long and tapering, retromargin bears a pair of contiguous teeth followed by one tooth, promargin has a pair of subcontiguous teeth only. Labium is short, truncate basally and apically, slightly convex on the sides.

Abdomen is oval, truncate at the base and narrow apically. It has broad median lanceolate white band bounded laterally by dark brown bands. Venter is white. Vulval aperture is bounded by a pair of triangular chitinous pieces which are rounded at their apices and notched on their outer margins, between them there is a club-shaped plate covering the aperture.

This species resembles *P. oakleyi* Gravely and *P. pusiola* (Thorell) in the pattern of cephalothorax, but the abdominal bands are neither wavy nor do they meet posteriorly as in the latter two species.

Male in this species is equal in size to the female, but the former is slenderer and has black, instead of brown, dorsal bands and palp.

Average length :—4·5 mm.

Locality :—Common in Lahore.

These spiders are very common on the low grass of gardens where they hunt their prey. They live in crevices in hedges. The female spider drags along the cocoon which is heavier than herself. The species is cannibalistic and does not thrive in captivity. If confined to cages spiderlings die after the second moult.

### 20. *PARDOSA MULANI* SP. NOV.

(Pl. XIII, figs. 45-46).

Cephalothorax is of the usual shape, light brown in colour ; thoracic region is circular laterally, truncate posteriorly ; median longitudinal streak, lateral bands and corselet grooves are absent ; cephalic region is narrower than the thoracic region, and has vertical sides, being much darker in the male than in the female. Median eyes are larger in the anterior row ; P. M. are larger than all others. Clypeus is low, narrower than the space between A.M. Cheliceræ are feeble and comparatively long with the usual number of teeth ; fang is long and curved. As in the preceding species maxillary lobes bear thick scopulæ on their inner margins and submarginal serrula ; femur of the female palp bears three median spines, patella is provided with two, and tibia with only one spine, tarsus is long and hairy. Bulb of the male palpal organ is very large and possesses spiral style. Sternum is cordate, dark brown in female and black in male and is produced between the posterior pair of coxæ. Legs are banded, long and slender, light brown in female and dark in male ; tibia I bears three pairs and metatarsus I four pairs of ventral spines.

Abdomen is broadly ovate, broad behind the anterior two-thirds, tapering posteriorly ; dorsum is yellowish brown with darker patches. Male has two rows of white specks (each row consists of three such specks), followed by a row of three white dots. Epigynal plate is spade-shaped. Posterior pair of spinnerets is longer than the anterior pair.

Average length :—Female, 7 mm.

Male, 6·5 mm.

Locality :—Mojpur.



## GENUS *OCYALE*.

1827. *Ocyale* Audouin, Sav. Descr. Egypte, Arach., p. 149.
1898. *Ocyale*, Simon, Hist. Nat. Araign., II, p. 345.
1900. *Ocyale*, Pocock, Fauna Brit. Ind., Arach., pp. 251-252.

Cephalothorax thick, convex, frontal broad, obtuse ; anterior row of eyes recurved, as long as the second row, ocular quad broad posteriorly ; clypeus broader than distance between A.M. ; legs IV, III, * $\overline{\text{I, II}}$ ; anterior tarsi and metatarsi scopulated. Anterior pair of spinnerets long, cylindrical.

### 21. *OCYALE KUMARI* SP. NOV.

(Pl. XIII, fig. 47).

Cephalothorax is highly convex, olive black, with white marginal spots and brownish top ; cephalic region is narrow and truncate in front ; thoracic region is nearly circular, with faint corselet grooves ; median longitudinal streak is absent. Cheliceræ are highly convex, covered with white hair. Maxillary lobes are as broad as long, truncate at the apex, more or less triangular in outline, little longer than broad. Sternum is cordate, truncate at the base, produced between the posterior pair of coxæ. Several black bands are present on the legs.

Abdomen is ovate, longer than broad, olive black, with a number of white dots and patches which change to reddish brown posteriorly. Vulval aperture is covered with a transverse plate. Anterior pair of spinnerets is thick, cylindrical, with a number of spigots at its tip ; posterior pair of spinnerets is slender and biarticulated.

Average length :—Female, 10 mm.

Locality :—Banks of the Ravi.

These spiders make burrows one inch and a half deep in sandy river banks. The burrow is lined with silk which spreads outside into a thinly woven sheet somewhat resembling that of *Hippasa* which however makes use of the existing crevices and spins thicker sheet-webs.

* "$\overline{\text{I, II}}$" Means that legs I and II are equal in length.

## GENUS *ANOMALOMMA*.

1890. *Anomalomma* Simon, Hasselt, Aran. Archip, Malay, p. 199.
1890. *Lysania*, Thorell, Ann. Mus. Stor. nat. Genova, 2nd ser., X, p. 312.
1898. *Anomalomma* Simon, Hist. Nat. Araign., II, p. 326.

Anterior row of eyes procurved, eyes small, narrowly spaced; labium longer than broad; chelicerae weak; legs not very long, spiny, tarsi slender. Posterior pair of spinnerets longer than anterior pair. Integument covered with long hair.

### 22. *ANOMALOMMA HARISHI* SP. NOV.

(Pl. XIII, figs. 53-54; Pl. XIV, figs. 55-56).

Cephalothorax is high, brown; cephalic region is higher than the thoracic region which is marked with a longitudinal black streak; corselet grooves are faintly marked. Eyes of the anterior row are procurved, medians are somewhat larger than the laterals and nearer to A. L. than to one another; second row of eyes is as long as the first row, these eyes being larger than others; ocular quad, formed by the posterior eyes, is broader than long and wider posteriorly. Clypeus is nearly three times as high as the space between A. M. Chelicerae are each provided with three teeth on the retromargin and a single tooth on the promargin and also bears a brush of hair. Maxillary lobes are twice as long as broad, each bearing an anterior submarginal serrula and scopula; tarsus of the palp is longer than the tibia. Femur of the male palp is claviform, patella and tibia are each one-third the length of femur, tarsus is nearly half as long as femur and is provided with spines as on other segments. Sternum is broadly ovate, slightly truncate at the base, produced behind between the posterior pair of coxae. Labium is longer than broad, truncate apically.

Abdomen is oval, deep brown mottled with black. Anal tubercle is very prominent. Vulval aperture is roofed over by a transverse plate with a deep semi-circular notch in the middle posteriorly. Anterior pair of spinnerets is very short; posterior pair is longer and thicker than the anterior pair.



Average length :—Female, 10 mm.
Male, 8 mm.

Locality :—Shalamar Gardens.

This species is found near water. The spider makes burrows in moist places and lines them with silk. At the slightest alarm it can jump on to the water on which it can also skip. It has also been seen catching its prey on water.

## FAMILY OXYOPIDÆ.

Eyes diurnal, A. M. far ahead of the other eyes, indirect eyes forming a hexagon; chelicerae long, weakly armed; clypeus very high; legs long, unequal, strongly armed with long spines, scopulæ and claw-tufts absent, inferior claw toothed. Spinnerets longer than in Lycosidæ; colulus present; anal tubercle long, conical.

Members of this family are arboreal in habits, never spin webs, are good jumpers and catch their prey like the Attidæ. The female fastens the cocoon on the leaf of a plant and keeps guard till hatching.

## GENUS *OXYOPES*.

1804. *Oxyopes* Latreille, Nouv. Dict. Hist. Nat., XXIV, p. 135.
1837. *Sphasus*, Walckenær, Apteres, I, p. 246.
1898. *Oxyopes*, Simon, Hist. Nat. Araign., II, p. 379.

Cephalothorax longer than broad, attenuated anteriorly; anterior eyes arranged in a trapezium, posterior eyes strongly procurved, eyes subequal; clypeus not narrower than ocular area; chelicerae each with one tooth on promargin and another on retromargin.

Key to species :—

*a*. Abdomen green.
  $a^1$. Vulval plate truncate posteriorly .. *O. wroughtoni.*
  $b^1$. Vulval plate with two semi-circular notches posteriorly .. .. *O. raviensis.*
*b*. Abdomen not green.
  $a^2$. Dorsum reddish brown.. ..*O. hindostanicus*
  $b^2$. Dorsum not reddish brown.
    $a^3$. Dorsum olive yellow .. .. *O. rufisternus.*
    $b^3$. Dorsum yellowish white .. *O. ryvesii.*

### 23. *OXYOPES WROUGHTONI* Pocock.

(Pl. XIV, figs. 57-60).

1901. *Oxyopes wroughtoni* Pocock, J. Bombay Nat. Hist. Soc., XIII, p. 483.

General colour of the body is green, cephalothorax is lighter with a pair of brown bands starting from the sides of the head and meeting posteriorly. A. M. are smaller than other eyes; latter are similar in size and form a hexagon. Chelicerae are long, tapering and each bears a black median longitudinal streak extending upto the bases of A. M. Fang groove is armed with one tooth and a few bristles. Thoracic region is as long as broad, and bears four longitudinal brown bands, the median pair of bands extending from the base of P. M. to the thoracic base, and the lateral pair converging posteriorly. Tibia of the male palpal organ is furnished below with a large subconical process. Legs are long, unequal, green in colour mottled with black spots; femur bears a pair of black ventral streaks.

Abdomen is dark green, broad anteriorly; it is ornamented with a pair of dorsal silvery lines extending upto, and converging in apical half of the abdomen to meet in the middle line from where they are continued posteriorly as a single band terminating in a round spot above the base of anal tubercle. Outer to these are ventro-lateral streaks alternately black and silvery white merging in the light green of the venter. Vulval plate is transverse, truncate behind, from where the black ventral band extends posteriorly.

Average length :—11 mm.
Localities :—Gardens, Lahore.
Also recorded from Bulsar (Pocock).

### 24. *OXYOPES RAVIENSIS* SP. NOV.

This species differs from the preceding one in the markings on the abdomen. Dorsum bears a broad, fusiform dark brown band extending to the posterior region. On each side of this band is another broad white band with dark brown patches extending to the posterior region. Vulval aperture is covered by a transverse plate with two semi-circular notches at its posterior end.

Average length :—11 mm.
Locality :—Common in Lahore.



### 25. *OXYOPES RUFISTERNUS* Pocock.

(Pl. XIV, figs. 61—64).

1901. *Oxyopes rufisternus* Pocock, J. Bombay Nat. Hist. Soc., XIII, p. 483.

Cephalothorax is deep mahogany in colour and bears a few white hair. Band-pattern is similar to that of *O. wroughtoni*. Sternum and coxæ are yellowish red in colour, and are provided with deep brick-red hair. In the specimens examined legs are deep mahogany, not black as in Pocock's account of this species.

Abdomen is olive yellow variegated with white and yellowish hair, otherwise resembling *O. wroughtoni* in pattern. Venter has a black band bordered by white lines. Vulval plate is transverse with obliquely cut posterior corners.

Average length :—7·5 mm.
Localities :—Common in Lahore.
Also recorded from Bulsar (Pocock).

### 26. *OXYOPES RYVESII* Pocock.

(Pl. XIV, fig. 65).

1901. *Oxyopes ryvesii* Pocock, J. Bombay Nat. Hist. Soc., XIII, p. 482.

The colour of the body is pale brown, the band-pattern of the cephalothoracic region resembles that of *O. rufisternus* except that the median pair of streaks is well marked anteriorly but very thin posteriorly.

Abdomen is yellowish white covered with silvery hair and has a median brown band set with red hair. Ventral median black band is bounded by reddish lines. Abdomen is shorter and thicker than in the three preceding species of *Oxyopes*.

Vulval plate is similar to that of *O. rufisternus*.

Length :—11 mm.
Localities :—Common in Lahore.
Also recorded from Allahabad (Pocock).

### 27. *OXYOPES HINDOSTANICUS* Pocock.

(Pl. XIV, fig. 66).

1901. *Oxyopes hindostanicus* Pocock, J. Bombay Nat. Hist. Soc., XIII, p. 481.

This species differs from other species of *Oxyopes* in being reddish brown in colour. Legs are ornamented with black

streaks on the dorsal side also. On each side of the ventral dark median band of the abdomen is a golden yellow line. Vulval plate is arched and its posterior excavation is divided into two by a distinct partition.

Average length :—Female, 9 mm.

Localities :—Common in Lahore.

Also recorded from Ceylon (Pocock); widely distributed in India.

## GENUS *PEUCETIA*.

1869. *Peucetia* Thorell, Nova Acta Soc. Upsal, (3) VII, p. 67.
1898. *Peucetia*, Simon, Hist. Nat. Araign., II, p. 378.

Cephalothorax longer than broad, attenuated and elevated anteriorly; posterior eyes subequal, equally spaced, situated in a procurved line; maxillary lobes comparatively long, straight and obtuse at the apex; fang groove unarmed.

### 28. *PEUCETIA VIRIDANA* (Stoliczka).

1869. *Sphasus viridana* Stoliczka, J. Asiat. Soc. Beng., XXXVIII, p. 220.
1884. *Peucetia nigropunctata*, Simon, Ann. Mus. Stor. nat. Genova, XX, p. 365.
1900. *Peucetia viridana*, Pocock, Fauna Brit. Ind., Arach., p. 255.

Cephalothorax is longer than broad, narrow anteriorly; cephalic grooves, median longitudinal streak and corselet grooves are absent. Anterior row of eyes is strongly recurved, A. M. are small; the remaining eyes are equal to one another in size. Clypeus is very broad and high. Cheliceræ are long but without any tooth on their grooves; fang is short and curved. Maxillary lobes have parallel sides, are obtuse apically, and convergent, with thick scopulæ. Labium is long, triangular and pointed apically. Sternum is cordate, truncate at the base and obtuse apically. Legs are long and spiny.

Abdomen is very long, broad at the base, narrow posteriorly. Vulva bears a pyriform sclerite, truncate posteriorly.

The general colour of integument is light green. Cephalothorax has a median reddish brown band extending from the eyes to its base; anteriorly the band divides into two lateral streaks along the clypeus and cheliceræ. Abdomen is green with a broad reddish patch at the base of the young spiderlings



only and is produced posteriorly in two lines of dots of the same colour; on each side of this is a white line. The adult female is uniformly coloured.

Length :—Female, 11 mm.

Localities :—Model Town.

Also recorded from Chingleput, Ceylon, Madras, Pondicherry, Travancore, Ootacamund (Pocock), Calcutta (Stoliczka).

Gravely remarks "....its colour and spiny legs make it most inconspicuous on plants bearing glandular hair, such as *Jatropa gossypifolia*, in whose foliage it most frequently makes its home." This statement is confirmed by the present study of *P. viridana*.

## FAMILY SICARIIDÆ.

Eyes six (eight in Plecteurinæ); cheliceræ weak, united at the base to a transverse transparent lamina; clypeus very high; maxillary lobes converging; onychium present; tarsal claws pectinate in a single or double row.

## GENUS *SCYTODES*.

1804. *Scytodes* Latreille, Nouv. Dict. Hist. Nat., XXIV, p. 134.
1873. *Dictis*, Koch, Arach. Austral., p. 294.

Cephalothorax elevated posteriorly; eyes six, nocturnal, arranged in three groups of two each; clypeus high, vertical; coxæ IV contiguous, tarsal claws two or three, each pectinate in a double row.

Koch created a new genus *Dictis* for the reception of forms with two claws, but according to Simon the number of claws in the genus *Scytodes* may decrease from three to two by a gradual diminution of the third inferior claw.

Key to species :—

*a*. Abdomen yellowish white .. *S. propinqua.*
*b*. Abdomen brown.
  $a^1$. Abdomen dotted with black .. *S. thoracica.*
  $b^1$. Abdomen not dotted with black.
    $a^2$. Dorsum black basally, with transverse bands posteriorly .. *S. sordidus.*
    $b^2$. Dorsum with transverse bands only .. .. .. *S. domestica.*

### 29. *SCYTODES PROPINQUA* Stoliczka.

(Pl. XIV, fig. 67).

1869. *Scytodes propinqua* Stoliczka, J. Asiat. Soc. Beng., XXXVIII, p. 232.

Cephalothorax is oval, broad, highly convex, high posteriorly, attenuated in front ; thoracic region is marked with horse-shoe-shaped streaks pointing anteriorly ; cephalic and corselet-grooves are absent. Clypeus is flat and broad. A. M. are far in advance of other eyes. Cheliceræ are feeble ; fang is short, almost subglobular at the base and bluntly pointed. Maxillary lobes are triangular, convergent and bear rudimentary scopulæ. Labium is long and triangular, exceeding the middle of the lobes. Sternum is oval, longer than broad. Legs are long, slender, unequal ; each tarsus is furnished with a pair of superior claws (each claw is pectinate in a double row), spurious claws and two or three onychial brushes.

Abdomen is oval, yellowish white, thickly covered with hair, and bears four pairs of dark spots bounded laterally by lines of the same colour.

Average length :—Female, 7 mm.

Localities :—Dane Park.

Also recorded from Calcutta (Stoliczka).

### 30. *SCYTODES THORACICA* (Latreille).

(Pl. XIV, figs. 68—73).

1802—5. *Aranea thoracica* Latreille, Hist. Nat. Incrus. Ins., VII, p. 249.
1837. *Scytodes thoracica*, Walckenaer, Apteres, I, p. 220.
1864. *Scytodes thoracica*, Blackwall, History of British Spiders, p. 380.
1896. *Scytodes thoracica*, Cambridge, Proc. Dorset. Nat. Hist. F. Cl. XVII.
1902. *Scytodes thoracica*, Rainbow, Rec. Aust. Mus. Sydney, VII, p. 312.
1910. *Scytodes thoracica*, Simon, Ann. Soc. ent. Fr., p. 305.

This species differs from *S. Propinqua* in being deep brown in colour. Cephalothorax has only a few black longitudinal streaks. Legs are banded.

Abdomen is dotted with black.

Average length :—10 mm.

Locality :—Rakh Shahdara.



According to Rainbow this was a European species which made its way to Australia by the agency of commerce. If so, it is probable that the species migrated into India also.

### 31. *SCYTODES DOMESTICA* Doleschall.

1859. *Scytodes domestica* Doleschall, Tweede Bijdr., p. 48.
1891. *Dictis fumida*, Thorell, K. S. Vet.-Akad. Handl. XXII, p. 33.
1895. *Dictis domestica*, Thorell, Spiders of Burma, pp. 67-68.
1905. *Scytodes domestica*, Simon, Ann. Soc. Ent. Belgique, p. 167.
1911. *Scytodes domestica*, Kulczynski, Karakow. Bull. Inten. Acad., p. 457.

This species resembles *S. thoracica* in shape of body and length of legs. Cephalothorax is light brown, with dark patches arranged in a circle. A black line extends from the frontal to the highest point of the thoracic region where it becomes club-shaped. Legs are without any bands ; femur I bears two rows of latero-ventral spines.

Abdomen is marked with transverse dark bands.

Average length :—Female, 9·5 mm.

Localities :—Common in Lahore.

Also recorded from Malay, Indo-China, Malabar (Thorell).

This spider is not web-spinning, and hides itself in dark corners of old houses.

### 32. *SCYTODES SORDIDUS* SP. NOV.

Colour of body is dark brown. Cephalothorax is highly convex and has a dark median streak which does not become club-shaped posteriorly ; on each side of this is a broad band with straight inner margin in the upper half, incurved and divergent posteriorly. Sternum, coxæ, trochanters and patellæ are black, remaining joints of legs being dusty yellow with black basal annuli on the femora. Tibiæ are annulated towards their tips.

Abdomen is longer than in other species of *Scytodes*. Dorsum is dark brown becoming black basally and has also four transverse dark brown bands posteriorly. The basal black patch is divided in the middle.

Average length :—Female, 9 mm.

Locality :—Gol Bagh.

## FAMILY DICTYNIDÆ.

Cephalothorax oval, cephalic part broad, more or less convex; eyes heterogeneous, in two almost parallel rows; clypeus vertical; maxillary lobes longer than broad; labium free; sternum oval, broad; legs long, slightly unequal, armed with isolated spines, claw-tufts and scopulæ absent, calamistrum present on metatarsus IV.

Abdomen ovoid, longer than broad, convex; cribellum transverse, rectangular and entire in many genera.

These spiders are sedentary in habit. They spin small retitelarian webs on leaves and twigs.

### GENUS *ALTELLA*.

1882. *Amphissa*, Cambridge, Ann. Mag. Nat. Hist., (5) IX, p. 2.
1884. *Altella* Simon, Bull. Soc. zool. Fr., p. 321.

Cephalothorax oval, long, flat in male, convex in female; anterior eyes subcontiguous, medians smaller; ocular quad trapeziform, broader than long; posterior row straight or slightly procurved, medians apart from each other; maxillary lobes and labium attenuated; sternum produced between posterior pair of coxæ. Cribellum entire.

### 33. *ALTELLA CONGLOBATA* SP. NOV.

(Pl. XIV, figs. 74—76, 78—78a).

Cephalic region is clearly separated from the thoracic region. Eyes are arranged in two compact transverse rows; ocular quad is square; cheliceræ are conical. Maxillary lobes are triangular, broad at the base and obtuse apically. Female palpal tarsus bears a monopectinate claw. Labium is triangular, free at the base. Sternum is cordate. Trichobothria are absent from the legs; tarsal claws are pectinated with long teeth; legs are IV, I, II, III.

Abdomen is globular, high anteriorly. Vulva is semicircular, with a pair of chitinous pieces at the apex. Anterior spinnerets are thick and wide apart, medians are short and slender. Anal papilla is rounded. Cribellum is entire.

The body is green or yellow in colour.

Average length :—3 mm.

Locality :—Sanda Road.

These spiders were caught on *Hibiscus* plants. They spin retitelarian webs on dorsal side of leaves. Cocoons are white and globular.



### GENUS *DICTYNA*.

1833. *Dictyna* Sundevall, Consp. Arach., p. 16.
1840. *Operaria*, Blackwall, Proc. Linn. Soc. London, p. 68.
1841. *Ergastis*, Blackwall, Trans. Linn. Soc. London, XVIII, p. 608.
1892. *Dictyna*, Simon, Hist. Nat. Araign., I. p. 241.
1902. *Mallos*, Cambridge, Biol. Centr. Amer., I, p. 308.

Cephalic part convex, globular; anterior row of eyes straight, eyes equal, or medians slightly smaller, equidistant; posterior eyes smaller, equal to one another, broadly separated, in a recurved line; ocular quad trapezoidal or quadrate, not much longer than broad; cheliceræ long, attenuated; labium longer than broad, attenuated and obtuse; maxillary lobes inclined; sternum broad, separating the posterior coxæ; legs short, spineless. Cribellum often entire, sometimes divided.

### 34. *DICTYNA ALBIDA* Cambridge.

(Pl. XIV, fig. 79).

1885. *Dictyna albida* Cambridge, Second Yarkand Mission, p. 29.

Cephalothorax is convex, sloping posteriorly and laterally; cephalic grooves are prominent; median longitudinal fovea is transverse, black. Carapace is yellow, with distinct marginal stripes, immediately above which is a broad yellowish brown band on each side. Eyes of the anterior row are recurved, medians being nearer to laterals than to one another, eyes are subequal in size. Eyes of the second row are recurved, equally spaced and subequal; ocular quad is nearly square. Clypeus is shorter than the distance between A. M. Cheliceræ are long,

attenuated, each with a small curved fang at the tip. Maxillary lobes are long, attenuated towards the tip. Labium is long and triangular. Sternum is nearly circular, broadly truncate at the base, and covered all over with white hair. Legs are IV, I, II, III, slender and hairy; colour is dull greyish yellow. Calamistrum is seen on the dorsal surface of leg IV.

Abdomen is oval, slightly convex and over-hanging the base of corselet. It is brownish yellow in colour variegated with white spots and patches and four small red brown spots on the median dorsal region. Cribellum is divided into two. Epigynal opening is slit-like.

Average length :—3 mm.
Localities :—Gol Bagh.
Also recorded from Yangihissar and Sirikol (Cambridge).

## FAMILY THERIDIIDÆ.

Eyes heterogeneous; clypeus broad; cheliceræ toothless; labium free or united at the base; onychium present; spines on tarsus IV showing comb like arrangement, abdomen variable.

These spiders are sedentary in habits. They spin retitelarian webs in which they are seen suspended head downwards. The cocoon is globular, from which spiderlings emerge by boring a circular hole.

Key to genera :—

*a*. Abdomen elongated.
  $a^1$. Abdomen at least four times as long as carapace .. .. *Ariamnes.*
  $b^1$. Abdomen not more than twice as long as carapace .. .. *Dipœna.*
*b*. Abdomen short.
  $a^2$. Anterior row of eyes straight.
    $a^3$. Posterior row of eyes procurved or straight .. .. *Theridion.*
    $b^3$. Posterior row of eyes recurved .. *Trigonobothrys.*



  $b^2$. Anterior row of eyes curved.
    $a^4$. Anterior row of eyes procurved.
      $a^5$. Posterior row of eyes straight .. *Achœa.*
      $b^5$. Posterior row of eyes recurved .. *Latrodectus.*
    $b^4$. Anterior row of eyes recurved.
      $a^6$. Ocular quad narrow anteriorly .. *Spintharus.*
      $b^6$. Ocular quad broad anteriorly .. *Rhomphœa.*

## GENUS *SPINTHARUS*.

1850. *Spintharus* Hentz, J. Bos. Soc. Nat. Hist. VI, p. 156.
1902. *Spintharis*, Cambridge, Biol. Centr. Amer., Araneæ, II.

Cephalothorax usually broader than long, thoracic part amply rounded on the sides, with an ovate longitudinal groove; eyes adequal, anteriors recurved, posteriors procurved; ocular quad narrow anteriorly; labium never marginated; sternum broad, convex; legs IV, I, II, III long, slightly unequal, teeth of tarsal claws increasing in length towards tips of claws. Abdomen soft.

### 35. *SPINTHARUS ARGENTEUS* SP. NOV.

(Pl. XIV, figs. 80—85).

Cephalothorax is very short, broader than long; thoracic part is broadly rounded laterally, and bears a median oval longitudinal fovea; cephalic part is high, short, gradually elevated from thoracic region, and separated from it by V-shaped cephalic groove. Eyes are heterogeneous, adequal, only A.M. being diurnal; anterior row of eyes is slightly recurved, and medians are nearer to laterals than to one another, posterior row of eyes is slightly curved, with the medians equally spaced from each other and from the laterals; ocular quad is nearly as broad as long, and narrow anteriorly. Clypeus is very high, slightly convex and inclined in front. Cheliceræ are weak, each with a transverse inner margin bearing a short tubercular tooth. Maxillary lobes are longer than broad, narrowing towards the distal end, convergent, scopulated on the inner margin; palpal tarsi are longer than patella and tibia combined; tibia of the male palp

is very short. Labium is superficially marked off from the sternum by a streak. Sternum is broad, slightly convex, longer than broad and attenuated posteriorly. Legs are long, unequal; tibiæ are thick; metatarsi and tarsi are slender; metatarsus IV is provided with a dorsal comb of bristles, the superior tarsal claws are slender, curved, and provided with teeth which decrease in length from apex to base.

Abdomen is globular, very high, projecting forwards over cephalothorax and is silvery white in colour. Spinnerets are six in number, subequal, with a colulus between the anterior pair.

Average length :—3 mm.

Locality :—Gol Bagh.

These spiders spin webs on rose bushes, and are found underneath leaves where they form white globular cocoons.

## GENUS *ACHÆA*.

1882. *Achœa* Cambridge, Proc. Zool. Soc. London, p. 428.
1894. *Achœa*, Simon, Hist. Nat. Araign., I, p. 551.

Cephalothorax normal, anterior row of eyes slightly procurved, medians nearer to laterals than to one another and much larger than laterals; posterior eyes equidistant; labium free, rebordered; margin of cheliceræ transverse and smooth; maxillary lobes converging. Abdomen soft, spineless.

### 36. *ACHÆA QUADRIPUNCTATA* Simon.

(Pl. XIV, fig. 86).

1895. *Achœa quadripunctata* Simon, Ann. Soc. ent. Fr., LXIV, p. 145.

Cephalothorax is longer than broad, attenuated anteriorly and yellowish red in colour; cephalic region is differentiated by deep cephalic grooves and rises gradually above the thoracic region. Eyes of the anterior row are slightly procurved; A. M. are larger and diurnal; posterior row is also procurved, eyes in this row are equal to one another but smaller than A. M. Cheliceræ are weak, and each is provided with a transverse conical protuberance on the inferior margin; fang is long. Maxillary



lobes are long, broad at the base, narrower and obtusely rounded at the tips; scopulæ are absent, serrula is submarginal. Labium is triangular and separated from the sternum. Sternum is cordate, narrow posteriorly, truncate at the base and produced between the posterior pair of coxæ.

Abdomen is reddish white with four black longitudinal wavy bands extending as far as spinnerets. Venter is black.

Average length :—5 mm.

Localities :—Lawrence Gardens.

Also recorded from Brazil (Simon).

## GENUS *THERIDION*.

1805. *Theridion* Walckenaer, Tabl. Aran., p. 72.
1864. *Sinamorous*, Templeton, Black. Spiders of Great Br. & Ire., II, p. 198.
1868. *Neottiura*, Menge, Preuss. Spinnen, p. 162.
1870. *Phylonethis*, Thorell, On European Spiders, p. 76.
1882. *Chrysso*, Cambridge, Proc. Zool. Soc. London, p. 429.
1888. *Mastostigmius*, Simon, Ann. Soc. ent. Fr., VII, p. 230.
1889. *Tobesoa*, Keyserling, Koch., Arach. Austral., p. 241.
1891. *Adelosimus*, Simon, Ann. Soc. ent. Fr., p. 7.
1897. *Hubba*, Cambridge, Biol. Centr. Amer., Araneæ, I, p. 231.

Cephalothorax ovate, obtuse in front; eyes of posterior row subequal, slightly procurved, rarely straight, anterior row of eyes straight; clypeus broader than space between A. M.; sternum longer than broad, attenuated posteriorly; labium broader than long; legs long and slender, I, IV, II, III.

### 37. *THERIDION SISYPHIUM* (Clerk).

1806—9. *Theridion sisyphium*, Latreille, Gener. Crust. Ins. p. 97.
1834. *Theridion sisyphium*, Hahn, Die Arachniden, p. 47.
1834. *Theridion pallidum*, Koch, Die Arachniden, p. 64.
1837. *Theridion sisyphium*, Walckenær, Apteres, II, p. 298.
1903. *Theridion sisyphium*, Bosenberg, Zoologica, Stuttgart, XIV, p. 98.

Cephalothorax is convex, circular, narrow and obtuse anteriorly; cephalic grooves are prominent. Anterior row of eyes is straight, all eyes are equal; posterior row is procurved; eyes in this row are smaller than those in the anterior row. Clypeus is

high, vertical. Maxillary lobes are triangular, convergent and obtuse at the tips. Labium is triangular, free. Sternum is cordate.

Abdomen is sub-globular, white, with a pair of black irregular bands fading in colour to brown laterally, bounded on sides by dark patches.

Average length :—Female, 5·5 mm.

Locality :—Lawrence Gardens.

## GENUS *TRIGONOBOTHRYS.*

1888. *Trigonobothrys* Simon, Ann. Soc. ent. Fr., p. 230.

Frontal very much produced, median longitudinal groove deep and semicircular, corselet grooves indistinct; clypeus very broad; posterior eyes large, almost equally apart, arranged in a slightly recurved row; anterior eyes in a substraight line; medians little larger than laterals; ocular quad hardly broader than long, slightly broader in front; sternum little longer than wide, not attenuated posteriorly; posterior coxæ wide apart, tarsi never smaller than metatarsi. Abdomen rhomboidal.

### 38. *TRIGONOBOTHRYS AHENEUS* SP. NOV.

(Pl. XI, fig. 10; Pl. XIV, figs. 87-88).

Cephalothorax is clearly separated into cephalic and thoracic regions by deep cephalic grooves. Anterior row of eyes is substraight, A. M. are nearer to one another than to laterals; posterior row is straight, eyes in this row are wide apart; ocular quad is as wide as long, wider anteriorly. Clypeus is high, vertical. Cheliceræ are toothless. Maxillary lobes are longer than broad, broader at the base. Femur of the female palp is long, patella is one-third of the length of palp, tibia is slightly longer than patella, and tarsus is nearly thrice as long as tibia. Labium is longer than wide, broadly truncate at the base and rounded apically, free. Sternum is circular, rounded apically and not produced between the posterior pair of coxæ, though they are



still wide apart. Legs are dark reddish brown and spiny; tibia, metatarsus and tarsus are equal in length. Teeth of the superior tarsal claws increase in length distally. Legs are IV, III, I, II.

Abdomen is spiny, rhomboidal, dark copper-coloured, with five white sigillæ four of which are antero-lateral and one postero-median. Epigynum is covered by a simple rectangular plate.

Average length :—Female, 2·5 mm.

Locality :—Government College grounds.

The only two specimens belonging to this species were found under stones.

## GENUS *ARIAMNES.*

1870. *Ariamnes* Thorell, On European Spiders, p. 37.
1894. *Ariamnes*, Simon, Hist. Nat. Araign, I, p. 502.

Clypeus narrow, vertical, more or less convex; each chelicera provided with a single conical tooth; labium semicircular, united at the base, immobile; sternum triangular, comparatively long, produced between coxæ IV; tibiæ of anterior legs much shorter than metatarsi; legs I, IV, II, III. Abdomen very long, prolonged beyond spinnerets as a long tail or cylindrical tubercle often more than seven times as long as body, flexible, sinuous, terminated in an obtuse angle, furnished with small spines.

### 39. *ARIAMNES FLAGELLUM* (Doleschall).

(Pl. XIV, fig. 89).

1857. *Ariadne flagellum* Doleschall, Nat. Tijd. Ned. Ind., XIII, p. 411.
1895. *Ariamnes flagellum*, Thorell, Spiders of Burma, p. 74.
1896. *Ariamnes flagellum*, Workman, Malaysian Spiders, I, p. 61.
1899. *Ariamnes flagellum*, Rainbow, Proc. Linn. Soc. N. S. W., XXIII, p. 652.

Carapace is longer than broad, depressed, on a level with the thoracic region which is flat. It is dull white in colour covered with brown hair, short spines and has a pair of reddish brown lateral bands which stop short of the posterior extremity.

Eyes are in two straight rows, A. M. are smaller than other eyes; P. M. are somewhat larger; all eyes are raised on small tubercles; ocular quad is square. Cheliceræ are as long as broad, rounded at the end; fang is shifted antero-ventrally, and is small and curved. Maxillary lobes are two and a half times as long as broad, rounded at the apex and bear short curved spines, white in colour owing to such pubescence. Labium is long and narrow. Sternum is long, truncate at the anterior end and pointed posteriorly where it widely separates the two coxæ of the posterior pair. Each coxa of the two anterior pairs bears a double row of ventral spines. Leg I is longer and stouter than other legs. Tarsal claws are thickly pectinate in leg I, and thinly in leg IV; inferior claw is straight and rudimentary.

Abdomen is spiny, nearly four times as long as cephalothorax, white with faint brown markings and has a pair of brown dots nearly half-way from the base. Posterior half of abdomen narrows to form the tail which is tuberculated laterally. Spinnerets are situated in the middle of the venter and project downwards.

In the specimens examined palps were broken and second and third pairs of legs were missing.

Length :—Female, 27 mm.

Localities :—Government College grounds.

Also recorded from Amboina (Doleschall); Singapore (Workman); Tharrawady (Thorell).

## GENUS *LATRODECTUS*.

1805. *Latrodectus* Walckenær, Tabl. Aran., p. 81.
1894. *Latrodectus*, Simon, Hist. Nat. Araign., I, p. 568.
1900. *Lathrodectus*, Pocock, Fauna Brit. Ind., Arach., p. 237.

Cephalothorax broad and high, narrow in front, median fossa deeply marked; anterior row of eyes procurved, posterior row recurved; clypeus broader than distance between anterior median eyes; sternum convex, plain, truncate at the base, longer than broad, attenuated posteriorly and projecting between the posterior coxæ; labium free at the base, large, semicircular, reaching nearly half way down the length of maxillary lobes, latter long and convergent; cheliceræ weak, attenuated, toothless; legs long, I, IV, II, III, slightly hairy, superior claws strong, with 6 teeth of equal length, inferior claw with two minute teeth. Abdomen soft, convex, subglobose.



### 40. *LATRODECTUS HASSELTII* Thorell.

1870. *Latrodectus hasseltii* Thorell, K. S. Vet. Akad, XXVII, p. 369.
1897. *Latrodectus hasseltii indicus*, Simon, Bull. Mus. Hist. Nat. Paris, p. 97.
1900. *Lathrodectus hasseltii indicus*, Pocock, Fauna Brit. Ind., Arach., p. 237.

Cephalothorax is black, longer than broad, slightly convex, and is marked with a deep median fossa also black in colour. Cephalic sutures are very prominent. Eyes in anterior row are subequal and equidistant, the row itself being narrower than the second row. Eyes in the second row are smaller, the row being slightly recurved. Ocular quad is slightly broader than long. Clypeus is broader than the distance between A. M. Cheliceræ are long and attenuated, weak and unarmed; fang is short and slightly curved. Sternum is longer than broad, truncate at the base, attenuated posteriorly, and slightly produced between the posterior pair of coxæ which are subcontiguous. Legs are long, plumose, black like the rest of the body; metatarsi are much longer than tarsi.

Abdomen is globular, slightly narrowed posteriorly, black in colour but is devoid of ornamentations, whilst the two subspecies, *L. hasseltii indicus* and *L. hasseltii elegans*, have characteristic ornamentations. Venter also is black, but does not show transverse red bands behind the genital folds. Hence this spider may be assigned to a new subspecies *L. hasseltii lahorea*.

Length :—Female, 4·5 mm.

Locality :—Government College grounds.

## GENUS *DIPŒNA.*

1845. *Atea* Koch, Die Arachniden, XI, p. 143.
1869. *Pachydactylus*, Menge, Preuss. Spinnen, p. 176.
1870. *Dipœna*, Thorell, On European Spiders, p. 91.
1881. *Lasceola*, Simon, Aran. Des Fr., V., pp. 114-136.
1884. *Delania*, Keyserling, Spinn. Amer., Theridiidæ, p. 35.
1894. *Dipœna*, Simon, Hist. Nat. Araign., I, p. 567.

Cephalothorax short, broad and high, narrow and raised in front; anterior eyes procurved; medians larger; posterior eyes large, slightly recurved, equispaced or medians nearer to each other; clypeus broad; cheliceræ short, feeble; maxillary lobes convergent, attenuated; sternum longer than broad, attenuated posteriorly; legs short, strong, I, IV, II, III, or IV, I, II, III. Abdomen soft, never provided with scutum.

### 41. *DIPŒNA NOTATA* SP. NOV.

Cephalothorax is longer than broad; cephalic region is separated from thoracic region by deep semicircular cephalic grooves, high and rounded with steep sides; thoracic region is convex but not so high as the cephalic region and bears a deep transverse fovea in the middle. Eyes of the first row are procurved, medians are larger and slightly nearer to each other than to the laterals. Second row is slightly recurved, medians are nearer to one another. Ocular quad is little longer than broad, and broader anteriorly. Clypeus is broader than the distance between A. M. Maxillary lobes are wider than long, with a straight cut at the apex; palp has the usual shape. Labium is triangular, free. Sternum is longer than broad, slightly tuberculate, and is not produced between the posterior coxæ. Legs are IV, I, II, III, pale yellow in colour, banded with black.

Abdomen is twice as long as broad, saddle-shaped, thicker in the anterior half, produced postero-dorsally above the spinnerets into a slightly narrow tail. Colour of abdomen is shining black, with a golden yellow spot above the base of do sum, shaped like the mark of exclamation, a pair of marks of the same colour on posterior end of the seat, and a red longitudinal streak between them. Lateral to the marks are small triangular



posteriorly pointed tubercles bordered with golden yellow streaks at the base. Posterior and ventral to these lateral tubercles is another triangular projection on each side. Venter is also black. Spinnerets are situated in the middle of the venter.

Average length:—Female, 5 mm.

Locality:—Gol Bagh, Government College grounds.

## GENUS *RHOMPHÆA.*

1872. *Rhomphœa* Koch L. Arach. Austral., p. 289.
1894. *Rhomphœa*, Simon, Hist. Nat. Araign., I, p. 502.

Clypeus broad, inclined; ocular region very broad; legs I, II, IV, III, or I, IV, II, III, long, unequal, anterior tibiæ slender, not shorter than femora. Abdomen short, posteriorly raised into an erect tubercle high above the spinnerets.

### 42. *RHOMPHÆA ORNATISSIMA* SP. NOV.

Cephalothorax is black, longer than broad, narrowed in front, rounded laterally and posteriorly, with a dorsal transverse fovea; cephalic region is a little below the level of thoracic region and rounded in front. Eyes are situated on an ocular tubercle; anterior row is procurved, eyes in this row are equidistant from one another; posterior row of eyes is procurved; ocular quad is slightly longer than wide, and narrow posteriorly. Maxillary lobes are long, convergent. Labium is triangular and united to the sternum which is broadly ovate. Sternum is deep brown, produced as a blunt process between posterior pair of coxæ. Legs are white, banded with black, I, IV, II, III, long; each of the superior tarsal claws bears three teeth which increase in length towards the distal end; inferior claw is smooth and bent at a right angle.

Abdomen is white with numerous brown dots and a pair of black lateral and a pair of posterior black bands. It is subglobular, and bears a median vertical prominence on the dorsum, which is produced high above the spinnerets.

Average length:—Female, 4 mm.

Locality:—Gol Bagh.

## FAMILY PHOLCIDÆ.

Cephalothorax short, almost rounded; cephalic part somewhat elevated on the sides; thoracic part with a deep median longitudinal groove; clypeus very high, with a little depression below the eyes; eyes elevated on cephalic prominence, heterogeneous, indirect eyes of each side forming a compact group; direct eyes smaller than and separate from others; cheliceræ feeble, united at the base, inner margin of each transverse, with a conical tooth-like protuberance; labium immobile, fused with sternum. Female palpal tarsus without claw; femur of male palpal tarsus very thick, tarsal bulb globular or oval, with apophysis. Abdomen variable in shape; anal tubercle large and circular.

The male in this species invariably possesses a secondary sexual character in the form of an anterior or marginal tooth on each chelicera whose position varies in different genera and species.

These spiders are sedentary in habit. They live in crevices, in trees and rocks, under stones and in dark places in houses. The female always carries the cocoon in her cheliceræ.

### GENUS *CROSSOPRIZA*.

1893. *Crossopriza* Simon, Hist. Nat. Araign., I, p. 416.
1900. *Crossopriza*, Pocock, Fauna Brit. Ind., Arach., p. 240.

Anterior eyes recurved, narrowly spaced; cheliceræ depressed at the inner margin and each provided with an oblique apical tooth; tarsus of female palp longer than patella and tibia combined; sternum broadly truncate posteriorly. Abdomen slightly ovate, abruptly declined posteriorly, raised much above the spinnerets.

### 43. *CROSSOPRIZA LYONI* (Blackwall).

(Pl. XV, figs. 90—96).

1867. *Pholcus lyoni* Blackwall, Ann. Mag. Nat. Hist., ser 3, XIX, p. 302.
1898. *Smeringopus lyoni*, Thorell, Spiders of Burma, p. 70.
1900. *Crossopriza lyoni*, Pocock, Fauna Brit. Ind., Arach., p. 240.



Cephalothorax is pale, broad, slightly rounded, narrow anteriorly; cephalic region is separated from thoracic region by deep cephalic grooves; thoracic region is convex, pale yellow in colour, and has a deep median longitudinal furrow extending upto the base of corselet, anterior end of the groove being pit-like. Cheliceræ are weak, broader at the base, each with a transverse cut at the apex and a short fang; fang-groove bears a single tooth only, without any filamentous hair; each chelicera of the male is provided with an outer marginal and a promarginal tooth little below the base of fang, the second tooth slightly covers the tooth in fang-groove. Maxillary lobes are long, broad at the base, attenuated and obtuse apically, with a light serrula on the middle of the outer margin; scopulæ are absent; the coxa and trochanter of the female palp are short, femur is nearly three times their combined length, patella is also short, tibia is shorter than femur; tarsus is very long and devoid of any true claw. The short apical piece of tarsus is comparable to that found in some males of the genus *Lycosa*. Coxa and trochanter of the male palp are also very small; femur is very thick, claviform, without any spines or bristles; patella is short and thick; tibia is long, thick and globular, provided with a number of fine bristles; tarsus consists of two portions, the anterior being thick and devoid of apophysis, the posterior being narrow, with numerous apophyses; the bulb is large and globular; style is long and straight. Eyes are in two recurved rows; A. M. are smallest and subcontiguous; A. L. are remote from A. M. and form a triad with P. M. and P. L. of each side; ocular quad is as wide as long, and narrow anteriorly. Sternum is black, convex, longer than broad, truncate at the base and apex. Labium is short, immobile and fused with the sternum. Legs are long, yellowish in colour; coxa, trochanter and patella are short; femur is very long, tibia is shorter than femur; metatarsus and tarsus are very long and attenuated; tarsus is flexible and provided with an onychium; each superior tarsal claw bears 5 teeth, inferior tarsal claw is smooth.

Abdomen is short, oval, sloping abruptly down to the spinnerets, yellowish brown, with dark patches and close-set

yellowish spots posteriorly. The black stripe runs from the posterior prominence to the spinnerets; it is not seen in some of the specimens. The male resembles the female except that it is smaller in size and its legs are longer.

Average length :—5·6 mm.

Localities :—Common in Lahore.

Also recorded from Madras, Chingleput, E. Khandesh, Allahabad (Pocock); Meerut, Burma, Tharrawady (Thorell).

This species is very common in houses. It spins a scanty cobweb in which it lies suspended with its back downwards. A cocoon is not formed but eggs are glued together and held in the cheliceræ of the mother till hatching, occasionally hung in a corner in the web.

## GENUS *ARTEMA*.

1837. *Artema* Walckenær, Apteres, I, p. 656.
1893. *Artema*, Simon, Hist. Nat. Araign., I, p. 465.
1900. *Artema*, Pocock, Fauna Brit. Ind., Arach., p. 238.

Cephalothorax broader than long, cephalic part prominent; A. M. not much smaller than other eyes, ocular quad not longer than wide; each chelicera with an additional tooth; sternum broader than long, posteriorly acuminate; legs long. Abdomen very high, sub-globular.

### 44. *ARTEMA ATLANTA* Walckenær.

(Pl. XV, figs. 97—103).

1837. *Artema atlanta* Walckenær, Apteres, I, p. 656.
1857. *Pholcus sisyphoides*, Doleschall, Nat. Tijd. Ned. Ind., XIII, p. 408.
1881. *Pholcus sisyphoides*, Thorell, Ann. Mus., Stor. nat. Genova, XVIII, p. 179.
1895. *Artema sisyphoides*, Thorell, Spiders of Burma, p. 69.
1900. *Artema atlanta*, Pocock, Fauna Brit. Ind., Arach., p. 239.
1925. *Artema atlanta*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXVII, p. 66.
1926. *Artema atlanta*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXVIII, p. 29.



Cephalothorax resembles that of *C. lyoni* except that the cephalic region is oblong. Both rows of eyes are recurved; A. M. are hardly smaller than other eyes; posterior line, when seen from above, appears recurved; medians are nearer to laterals than to one another. Clypeus is three times as long as the width between A. M., oblique and slightly depressed below the eyes, and marked with an oblique band. Cheliceræ are fused at the base, and transversely truncate at the apex; the retro-margin is provided with a comparatively long membranous tooth which is mobile and conical, another tooth-like protuberance is present near the base of the fang. Cheliceræ in the male are stronger than those in the female; each is provided on its outer lateral surface with a very thick denticulated keel, which exceeds the length of the chelicera. Maxillary lobes are a little narrower at the base, and bear thin scopulæ apically; serrula is antero-lateral. Palp of female is slender, tibia is longer than patella but shorter than femur, tarsus is narrower and longer than patella and tibia combined. Trochanter of male palp is short, femur is thick and convex above, patella is ring-like, tibia is thick and convex but shorter than femur, tarsus is very short, and bears an apophysis which is twice as long as itself. Sternum is produced between the posterior pair of coxæ. Legs are long, all the segments are annulated apically.

Abdomen is high posteriorly, as in *C. lyoni* but more globular. Vulval aperture is bounded by a thick, brown chitinous plate with a posterior concave border.

Average length :—8 mm.

Localities :—Common in Lahore.

Also recorded from Travancore, Chingleput, Thanna, Meerut, Poona, E. Khandesh, Karachi (Pocock); Tharrawady (Thorell).

This species often occurs in the same localities and has the same habits as *C. lyoni*. It often kills the latter species and occupies the web.

## FAMILY ULOBORIDÆ.

Cephalothorax slightly elevated, cephalic structures and median longitudinal groove always present; eyes homogeneous, eyes of anterior row smaller; cheliceræ robust, broader than long, parallel, convex, armed with small serial teeth, fang curved; sternum grooved, broadly truncate in front, acuminate posteriorly, not produced between posterior coxæ; labium free; legs long, unequal, anterior legs longer and stronger than others, metatarsus IV shorter than tibia, slightly flexible, concave above, provided with calamistrum, tarsus provided with serially arranged spines, claws and spurious claws. Anterior spinnerets very thick, widely separated from each other; anal tubercle long, conical; cribellum entire, straight and transverse.

Spiders of this family spin webs which simulate orb-webs of Argiopidæ.

### GENUS *ULOBORUS*.

1806. *Uloborus* Latreille, Gener. Crus. Ins., I, p. 109.
1850. *Phillyra*, Hentz, J. Bos. Soc. Nat. Hist., VI, p. 25.
1858. *Orithyia*, Black, Ann. Mag. Nat. Hist., p. 331.
1859. *Veleda*, Black, Ann. Mag. Nat. Hist., p. 96.
1864. *Zosis*, Simon, Hist. Nat. Araign., I, p. 224.
1887. *Philoponus*, Thorell, Ann. Mus. Stor. nat. Genova, V, p. 27.
1892. *Uloborus*, Simon, Hist. Nat. Araign., I, p. 214.
1893. *Uloborus*, McCook, Amer. Spiders, III, p. 272.
1896. *Ariston*, Cambridge, Biol. Centr. Amer., Aranæ, I, p. 216.

Cephalothorax oval; eyes remote from one another, arranged in two rows, posterior eyes equal, recurved, medians away from each other and larger than laterals; ocular quad longer than wide; maxillary lobes straight, short; legs I, IV, II, III. Abdomen oval in shape.

### 45. *ULOBORUS PLUMIPES* Lucas.

(Pl. XV, figs. 104–110).

1842. *Uloborus americanus*, Walckenær, Apteres, II, p. 229.
1893. *Uloborus plumipes*, McCook, Amer. Spiders, III, p. 274.

Cephalothorax is oval, pale white to light brown in colour; eyes are in two slightly recurved rows, A. M. are nearer together,



P. M. are separated by more than three times their diameter, and are nearer to laterals. Cheliceræ are very thick, broader than long, provided with two large teeth, between which there is a row of small denticulations. Maxillary lobes are longer than wide, and broadest in the middle, rounded apically, with anterior submarginal scopulæ and serrula; tibia of female palp is shorter than tarsus, all segments are provided with short apical spines; the tarsal claw bears only one tooth. Sternum is cordate, longer than broad, and grooved in the middle; it is brown to black in colour; its hind end is obtuse and is in front of coxæ IV. Legs are I, IV, II, III; first pair is longer and stouter than others, its tibiæ are provided with a bunch of spathulate hair collectively known as tibial spurs, and are as long as femora, metatarsi are even longer, slenderer and merge into the long tarsi; metatarsi of the remaining legs are shorter than the femora; metatarsus IV is concave above, the concavity being furnished with a row of bristles forming calamistrum. Legs are of the same colour as the cephalothorax, banded with brown to black.

Abdomen is long, ovate, with a high slightly notched base and white in colour; it bears a pair of shoulder prominences in the anterior half where it attains its maximum breadth. Cribellum is entire, transverse, provided with short hair in the anterior half. Anal tubercle is long, slightly smaller than the posterior spinnerets. Anterior spinnerets are cylindrical, very thick and are separated by the cribellum; posterior spinnerets are bisegmented, dull white or grey to dark grey according to the depth of colour of thoracic region.

Average length :—Female, 4 mm.

Localities :—Common in Lahore.

## FAMILY ARGIOPIDÆ.

This family is characterised by the presence of spurious claws similar to those in Uloboridæ. It differs from the latter in the absence of calamistrum and cribellum. This is the only family of spiders that spin true orb-webs.

Key to genera :—

*a.* Posterior eyes procurved.
  $a^1$. Head flattened as seen from above .. *Argyope.*
  $b^1$. Head rounded as seen from above.
    $a^2$. Maxillary lobes long .. .. *Leucauge.*
    $b^2$. Maxillary lobes short .. .. *Araneus.*
*b.* Posterior eyes not procurved.
  $a^3$. Posterior row of eyes recurved .. *Cyrtophora.*
  $b^3$. Posterior row of eyes aligned.
    $a^4$. Orb-web complete .. .. *Cyclosa.*
    $b^4$. Orb-web without one sector .. *Zilla.*

## GENUS *CYRTOPHORA.*

1864. *Cyrtophora* Simon, Hist. Nat. Araign., p. 261.
1895. *Cyrtophora*, McCook, Amer. Spiders, III, p. 235.
1895. *Cyrtophora* Simon, Hist. Nat. Araign., I, p. 775.
1900. *Araneus*, Pocock, Fauna Brit. Ind., Arach., I, p. 226.

Cephalothorax short, cephalic region long ; eyes arranged in three groups, laterals widely separated from each other, A. L. nearer to A. M., both rows slightly recurved ; sternum triangular ; labium low ; maxillæ long, broad distally ; legs I, II, IV, III, stout, scantily armed. Abdomen conical, tuberculated, nearly perpendicular to plane of cephalothorax.

### 46. *CYRTOPHORA CITRICOLA* (Forskål).

(Pl. XIV, figs. 111—115).

1820. *Epeira opuntiæ*, Dufour, Ann. gen. Sci. Phy., V, p. 355.
1841. *Epeira citricola*, Walckenær, Apteres, II, p. 143.
1841. *Epeira opuntiæ*, Walckenær, Apteres, II, p. 140.
1858. *Epeira emarginata*, Lucas, Arch. Ent., II, p. 42.
1863. *Epeira flava*, Vinson, Aran. des iles Rehun. Maur. et Madg., pp. 222, 313.
1865. *Epeira dorsuosa*, Blackwall, Ann. Mag. Nat. Hist., p. 462.
1872. *Cyrtophora sculptilis*, Koch, Arach. Austr., I, p. 128.
1873. *Cyclosa citricola*, Gerst., Von der Decken's Reisen in Ost-Africa, III, p. 494.
1874. *Cyrtophora opuntiæ*, Simon, Arach. France, I, p. 34.
1895. *Epeira (Cyrtophora) citricola*, Thorell, Spiders of Burma, p. 172.



1896. *Cyrtophora citricola*, Workman, Malaysian Spiders.
1900. *Araneus citricola*, Pocock, Fauna Brit. Ind., Arach., p. 226.
1926. *Cyrtophora citricola*, Wheeler, Psyche, Boston, p. 33.

Cephalothorax is broadly truncate at the base, with a median longitudinal fossa ; thoracic region is slightly high, light blue and is covered with white pubescence. A. M. are separated from each other by 1·25 times their diameter, and P. M. by a distance equal to their diameter ; distance between A. L. is also equal to their diameter ; ocular quad is a little longer than wide and narrow posteriorly. Clypeus is 1·5 times as long as the space between A. M. Sternum is triangular, longer than wide, pointed apically, with a yellow median band and brownish margin ; sternal cones are prominent. Legs are long, stout, of the colour of abdominal streaks.

Abdomen is cylindrical, longer than wide, thicker at the base which overhangs the thoracic region. Dorsum is slightly concave, and bears, just anterior to its middle, a pair of shoulder humps and a pair of lateral tubercles. Abdomen is bifid behind, the processes being blunt, and is produced posteriorly beyond the spinnerets. Vulva is without scape. Dorsum may be white, grey brown, yellowish brown, reddish brown or even black, with a white sinuous line encircling it anteriorly and laterally and has also a median line of white dots.

Length :—Female, 5·75—12 mm.
Male, 3·5 mm.

Localities :—Lahore gardens.

Also recorded from Ceylon, Bangalore, Chingleput, Kanara (Pocock) ; Rangoon, Tharrawady (Thorell).

### 47. *CYRTOPHORA CICATROSUS* (Stoliczka).

1869. *Epeira (Nephila?) cicatrosus* stoliczka, J. Asiat. Soc. Beng. XXXVIII, p. 242.
1878. *Epeira salebrosa*, Thorell, Ann. Mus. Stor. nat. Genova, XIII, p. 48.
1892. *Meta adpersa*, Karsch, Ent. Z., Berlin, XXXVI, p. 284.
1900. *Araneus cicatrosus*, Pocock, Fauna Brit. Ind., Arach., p. 226.
1921. *Cyrtophora cicatrosa*, Gravely, Rec. Ind. Mus., Calcutta, XXII, p. 413.

Cephalothorax is longer than wide, slightly narrow anteriorly, and has a black band extending from head to base; the thoracic region has also a pair of lateral bands. A. M. are separated by a distance equal to their diameter, distance between A. M. and A. L. is also equal to their respective diameters; P. M. are separated by one diameter and P. L. by one diameter and a half. Clypeus exceeds in length the space between A. M. Maxillary lobes are longer than broad, narrow at the base, broad and rounded apically. Labium is short, triangular, broad. Sternum is convex provided with three pairs of sternal cones and has a yellow streak along the median line; it is reddish brown in colour. Legs are long, slender, with a pair of black longitudinal streaks on the dorsal side of the first two femora only, the remaining segments are spotted with black.

Abdomen is oblong, rounded at the base, the anterior half bears two pairs of black tubercles dorso-laterally. Dorsum has a white club-shaped sigilla in the middle and a pair of brown lateral bands extending to the bases of the tubercles. The bands become lighter in colour posteriorly. A black spot is present between the posterior pair of tubercles. Posterior to this spot there is a reddish brown square with black sides, which are bounded anteriorly and laterally by white lines. Venter has a pair of dotted lines starting from the epigynal region.

There is a pair of white bands converging posteriorly into a white spot, each located on the outside of the dotted line. Posterior prolongation is not bifid as in *C. citricola*; its posterior declivity is marked with an inverted club-shaped black band marginated with white. Vulva is without scape.

Average length :—Female, 6·5 mm.

Localities :—Lawrence Gardens.

Also recorded from Chingleput, Allahabad (Pocock); Calcutta (Stoliczka); Tharrawady, Moulmien (Thorell); Nasik (Gravely).



## GENUS *ARANEUS*.

1757. *Araneus* Clerk, Svenska Spindlar, p. 22.
1805. *Epeira*, Walckenær, Tabl. Aran., p. 53.
1847. *Atea*, Koch, Uebers. Arach. Syst., I.
1895. *Araneus*, Simon, Hist. Nat. Araign., I, p. 829.
1900. *Araneus*, Pocock, Fauna Brit. Ind., Arach., p. 223.

Cephalothorax moderately high, oval, corselet-grooves and cephalic grooves conspicuous, margin of corselet usually without pubescence; cephalic region depressed anteriorly, quadrate; sternum shield-shaped or cordate; lateral eyes raised or tuberculated, space between A. M. and A. L. 1·5 times as long as the diameter of the latter or 2—2·5 times as space between A. M., space between P. M. and P. L. greater than the space between A. M. and A. L.; clypeus low, rarely 2—2·5 times as long as diameter of A. M., median eyes unequal, ocular quad not much longer than broad. Abdomen usually subglobose or oval, rounded at the base, narrow or triangularly ovate at the hind end; skin soft and pubescent; epigynum usually with a prolonged scapus.

Key to species :—

*a*. Abdomen high posteriorly.
  $a^1$. Ocular quad square .. .. *A. laglaizei.*
  $b^1$. Ocular quad rectangular .. .. *A. excelsus.*
*b*. Abdomen high anteriorly.
  $a^2$. Ocular quad with parallel sides.
    $a^3$. Ocular quad longer than broad .. *A. melanocrania.*
  $b^3$. Ocular quad square.
    $a^4$. Abdomen with a pair of lateral tubercles .. .. *A. camilla.*
    $b^4$. Abdomen without tubercles .. *A. nympha.*
  $b^2$. Ocular quad narrowing posteriorly.
    $a^5$. Ocular quad longer than broad .. *A. umbratica.*
    $b^5$. Ocular quad as long as broad.
      $a^6$. Abdomen oblong .. .. *A. fulvus.*
      $b^6$. Abdomen as broad as long.

$a^7$. Abdomen with lateral cones *A. alboquadratus.*

$b^7$. Abdomen without lateral cones.

$a^8$. Dorsum with a sinuous folium *A. pavidus.*

$b^8$. Dorsum with a black inverted sigilla .. .. *A. formosus.*

## 48. *ARANEUS FULVUS* SP. NOV.

(Pl. XI, fig. 4).

Cephalothorax is heavy, reddish yellow, covered with white pubescence; cephalic region is square, highly prominent, dark brown in colour. A. M. are much larger than P. M., A. L. are smaller than other eyes; distance between A. M. is one-third of the distance between A. M. and A. L., distance between P. M. and the medians is six times the space between medians; ocular quad is much narrowed posteriorly; lateral eyes are contiguous. Legs are reddish yellow, armed with a few spines and bristles. Sternum is cordate, provided with sternal cones.

Abdomen is oblong, rounded both basally and apically, without any shoulder prominences or tubercles, yellow in colour with a pair of brown dorsal bands. Integumentary hair are dark brown. Venter is black, with a pair of yellowish spots in the middle. Epigynum is provided with a long scape bent at a right angle and separated posteriorly from the basal portion by a shallow tubercular notch.

Length :—Female, 12 mm.

Locality :—Gol Bagh.

This species is represented by a single specimen from Gol Bagh, found in a retreat which the spider had made by gluing together two leaves and lining the interior with silk. The top of this retreat was covered by another leaf which was fixed with silk in such a manner as to allow only a lateral exit to the spider. This retreat was probably connected by a telegraph line to the orb proper.



## 49. *ARANEUS CAMILLA* (Simon).

1889. *Epeira camilla* Simon, J. Asiat. Soc. Beng., LVIII.

Cephalothorax is longer than broad, convex, high in the middle of thoracic region; cephalic grooves are not distinct, dorsal longitudinal groove is not in the form of fossa. Anterior row of eyes is nearly straight, medians are separated from each other by 1·5 diameter, laterals by 2·5 diameters; eyes of the second row are slightly procurved, the space between medians 1·5 diameter, the space between laterals 3·5 diameters; ocular quad is square; lateral eyes are contiguous and sessile. Maxillary lobes are convergent and broad distally. Labium is short and rounded. Sternum is cordate, black in colour. Legs are short, strong, pale banded with black.

Abdomen is broadly triangular, higher in front, with a pair of lateral conical tubercles situated slightly posterior to the base of dorsum, narrow and sloping posteriorly. It is brown in colour, with a median long reddish brown streak, surrounded by pale markings. Outer to these there is a deep brown broadly lanceolate area. Posterior and lateral to the dorsal tubercles are black anteriorly curved lines, which decrease in length posteriorly with the width of the abdomen. Venter is light brown. Epigynum bears a straight vertical scape.

Length :—Female, 5·5 mm.

Localities :—Common in Lahore.

The species is represented by one specimen.

Also recorded from Jaonsar, Deota 7,700 feet (Simon).

## 50. *ARANEUS EXCELSUS* (Simon).

(Pl. XVI, fig. 116).

1889. *Glyptogona excelsus* Simon, J. Asiat. Soc. Beng., LVIII, p. 337.
1896. *Epeira excelsa*, Bank, J. N. Y. Ent. Soc. IV, p. 90.
1906. *Araneus excelsus*, Simon, Ann. Soc. ent. Fr., p. 283.

Body is light or dark brown in colour. Cephalic region is separated from the thoracic region by its darker colour and deep

cephalic grooves from which a black line extends upto the base of corselet. Anterior row of eyes is slightly recurved, medians separated by 1·5 diameter and laterals by 2·5 diameters; posterior row is procurved, medians being separated by 1·25 diameter and laterals by 3 diameters; ocular quad is slightly longer than wide; lateral eyes are sessile. Sternum is cordate. Posterior coxæ are nearer together, first and second femora are banded black, third is pale distally; the remaining segments are annulated distally.

Abdomen is cordate, very high above the spinnerets which are directed postero-dorsally. Spinnerets arise near the middle of the ventral side. Dorsum is faint or dark grey with a median brown or black patch bounded on each side by a linear row of two black spots. In some specimens the median band extends up to the posterior region and is connected with a pair of dark coloured stripes. Hind end of the abdomen is black. Venter is also black, and bears a pair of yellowish white or deep yellow spots on each side of the median line posterior to the genital aperture. These spots are followed by a pair of smaller spots of the same colour one on each side of spinnerets. The region behind the spinnerets is marked with a grey crescent. Scape of the vulva is dark reddish brown, and is bent at a right angle.

Average length :— Female 4 mm.

Localities :— Common in Lahore.

Also recorded from Berkuda Islands, Serampur, Behara, Eastern Himalayas, Kalimpang, Chhota Nagpur, Upper Burma, Rawalpindi (Simon).

### 51. *ARANEUS UMBRATICA* (Clerk).
### (Pl. XI, fig. 3).

1834-37. *Epeira umbratica*, Hahn, Die Arachniden, II, p. 24.
1872. *Epeira umbratica*, Thorell, Synonyms of European Spiders.
1903. *Epeira umbratica*, Bosenberg, Zoologica, Stuttgart, XIV, p. 33.

The body is dark reddish brown in colour, covered with white hair. Cephalothorax is more reddish than the abdomen which is yellowish.



Anterior eyes are in a straight line, medians separated by 1·5 times their diameter, and laterals by 4·5 diameters; posterior row is procurved, medians being separated by 0·75 diameter and laterals by 6 diameters; laterals are sessile and contiguous; ocular quad is much longer than wide and a little wider in front. Cheliceræ are brownish, with black, curved fangs. Sternum is reddish brown, oval, with a straight anterior edge; sternal cones are present. Labium is triangular, twice as long as broad. Coxæ are pale yellowish, separated from each other by sternal cones, femur is light red, distal segments are pale yellow, covered with brown hair, and without any bands; metatarsi and tarsi are slender, gradually tapering, and marked with dark spots here and there; metatarsi and tarsi of first two pairs are curved.

Abdomen is triangularly ovate, yellowish brown, marked with black spots. Venter is black in front of the epigynal fold, yellow behind where it bears a pair of brown sigilla. Scape is black, and slightly bent at the tip. Spinnerets are reddish brown, anterior pair being longer than the posterior pair.

Average length :—Female, 13 mm.

Locality :—Lahore Cantonment.

This species is represented by a single spider collected from near a rain pond; it was seen sitting in the centre of an orb one foot across, but without a telegraph line.

### 52. *ARANEUS LAGLAIZEI* (Simon).

1877. *Epeira laglaizei* Simon, Ann. Soc. ent. Fr., V. p. 77.
1878. *Epeira telura*, Thorell, Ann. Mus. Stor. nat. Genova, p. 84, 273.
1881. *Epeira laglaizei*, Thorell, Ann. Mus. Stor. nat. Genova, p. 119.
1889. *Epeira laglaizei*, Simon, J. Asiat. Soc. Beng., LVIII, p. 339.
1889-90. *Epeira laglaizei*, Thorell, Ann. Mus. Stor. nat. Genova, p. 167.
1896. *Epeira laglaizei*, Workman, Malaysian Spiders.
1900. *Araneus laglaizei*, Pocock, Fauna. Brit. Ind., Arach., p. 224.
1906. *Araneus laglaizei*, Simon, Ann. Soc. ent. Fr. p. 283.

Cephalothorax is light yellow, covered with brown hair. Eyes of the anterior row are aligned, medians separated by one diameter and laterals by 1·5 diameter; posterior row of eyes is slightly procurved, with the medians separated by half

diameter and laterals by 2 diameters; lateral eyes are sessile and contiguous; ocular quad is square.

Abdomen is globular, higher posteriorly. Dorsum is whitish grey, with a median brown band and a pair of lateral bands of the same colour extending as far as the spinnerets. Dorsum is marked anteriorly with brown irregular patches which extend as streaks postero-ventrally. Venter is marked with a median black stripe starting from the genital fold, on each side of this stripe are dots of which the median is the largest.

Length :—Immature female, 4·5 mm.

Localities :—Gol Bagh.

Also recorded from Ootacamand, Jaunsar, Thadyar (Pocock); Burma (Thorell); Indo and Austro-Malaysia (Workman).

### 53. *ARANEUS NYMPHA* Simon.

1889. *Araneus nympha* Simon, J. Asiat. Soc. Beng., LVIII, p. 339.

Cephalothorax is deep orange in colour. Anterior row of eyes is slightly recurved, medians being separated by one diameter and laterals by a little more than a diameter; eyes of the second row are procurved, medians are separated by one diameter, and laterals by 1·5 diameter; ocular quad is in the form of a square; lateral eyes are sessile and contiguous. Legs are yellowish with black streaks running along the dorsal surface of the femora, distal segments are banded with black. Sternum is chestnut in colour.

Abdomen is circular, slightly longer than broad, broader anteriorly, reddish yellow in colour and has three pairs of anteriorly directed crescent sigilla, each of which has a black dot in the middle of its concavity, flanked by four such markings with horns pointing posteriorly. On the distal region of the abdomen is a pair of circular dots. Venter is also reddish yellow and has a black crescent in front of the spinnerets with the horns directed anteriorly.

Length :—Immature female, 2·75 mm.

Localities :—Gol Bagh.

Also recorded from Jaunsar, Deota (Simon).



### 54. *ARANEUS ALBOQUADRATUS* SP. NOV.

Cephalothorax is highly convex; cephalic region is slightly depressed, sloping anteriorly, and is distinctly marked off from the thoracic region by dark coloured cephalic grooves which are followed by a deep median fossa. Eyes are sub-equal and homogeneous; lateral eyes are contiguous; ocular quad is nearly as broad as long, somewhat wider in front. Clypeus is low and recurved, nearly one-third the height of the ocular quad. Cheliceræ are pale red in colour, with black tips and short curved fangs. Maxillary lobes are nearly as wide as long; palps are indistinctly banded. Labium is short and triangular, rounded apically. Sternum is pale white in colour, and has an obtuse posterior angle. Coxæ and anterior pair of femora are pale white, other segments are somewhat darker and banded with black.

Abdomen is triangular, rounded basally, and has a pair of cone-shaped, laterally inclined shoulder prominences on the basal half of the dorsum. Dorsum is ivory black, with a white trapezoidal patch whose anterior margin is level with the tips of shoulder prominences, the posterior margin merges with the colour of the dorsum. Anterior to this area is a jet black pentagonal median sigilla with white anterior border. Venter is grey, and marked with a reddish brown median streak extending to the epigynal fold; it is ivory black posteriorly. Scape of the vulva is bent at a right angle.

Length :— Female, 6 mm.

Locality :—Model Town.

The species is represented by a single specimen.

### 55. *ARANEUS MELANOCRANIA* (Thorell).

(Pl. XVI, fig. 125).

1887. *Epeira* (*Zilla*) *melanocrania* Thorell, Ann. Mus. Stor. nat. Genova, XXV, p. 209.

1889. *Epeira melanocrania*, Thorell, Ann. Mus. Stor. nat. Genova, XXXIX.

Cephalothorax is light yellow, narrow in front, cephalic region is differentiated from the thoracic region by the cephalic grooves,

and is reddish brown in colour; corselet grooves and median longitudinal grooves are absent. Ocular quad has parallel sides and is a little longer than wide; lateral eyes are sessile but conspicuous. Clypeus is very low. Labium is short and triangular. Sternum is broadly ovate, yellowish, with darker margins. Coxæ and femora of legs are light yellow, the remaining segments are darker and banded with brown.

Abdomen is triangular, with a rounded base, and is lustrous yellowish white in colour. The dorsum is marked with dark folium, the latter has sinuous margins. Venter is white interspersed with brown dots.

Length :—Immature female, 4·5 mm.

Localities :—Model Town.

Also recorded from Pusa, Bengal, Madras, Burma (Thorell).

## 56. *ARANEUS PAVIDUS* Simon.

(Pl. XVI, fig. 126).

1906. *Araneus pavidus* Simon, Ann. Soc. ent. Fr., LXXV, p. 309.

Cephalothorax is convex; slightly longer than broad, olive yellow in colour and is covered with yellow hair, cephalic grooves are indistinct and corselet grooves are absent. Eyes of the anterior row are arranged in a straight line, subequal, medians being separated by 1·5 diameter and laterals by 3 diameters; second row is procurved, medians are separated by less than a diameter and laterals by 5 diameters; lateral eyes are sessile and subcontiguous; ocular quad is as long as broad, narrow posteriorly. Labium is twice as broad as long, triangular, not reaching the middle of the maxillary lobes. Sternum is oblong, with faint sternal cones, broadly truncate at the base, and orange coloured.

Abdomen is triangularly cordate, deep brown in colour, with a triangular sinuous folium on the dorsum and is covered with yellowish hair. Venter is also of the same colour, with a



pair of yellowish spots. Epigynum bears a leaf-shaped scape bent at a right angle.

Average length :—Female, 9 mm.

Localities :—Lawrence Gardens.

Also recorded from Darjeeling, Pashok (Simon).

## 57. *ARANEUS FORMOSUS* SP. NOV.

(Pl. XI, fig. 5).

Cephalothorax is longer than broad, pale yellow, with a reddish brown median cone-shaped band extending from P. M. to the top of thoracic region. A. M. are larger than other eyes and are separated from one another by three-fourths diameter, A. L. are separated by 2·5 diameters, the row itself is slightly recurved; posterior row of eyes is procurved, medians are separated from each other by half diameter and laterals from the medians by 3 diameters; laterals are sessile and contiguous; ocular quad is nearly as wide as long, and wider anteriorly. Clypeus is narrow. Maxillary lobes are yellowish white, nearly as wide as long, broad at the base, truncate at the distal end which is straight. Labium is nearly twice as broad as long, rounded laterally, its anterior end is pointed. Sternum is cordate, longer than broad, emarginate at the base, acute apically, with faint sternal cones. Legs are pale yellow, with more deeply coloured bands beyond the femoral joints.

Abdomen is triangular, high and rounded at the base, pointing posteriorly; it is dark brown in colour, with a black patch in the middle, shaped like an umbrella. Venter is uniformly dark brown. Scape of vulva is bent at a right angle. Spinnerets are pale yellow.

Length :—Female, 7 mm.

Locality :—Dane Park.

This species is represented by a single specimen. The spider spins a vertical orb-web with a telegraph line, but without any retreat. The telegraph line leads to the under side of a leaf where the spider sits.

## GENUS *ZILLA*.

1834. *Zilla*, Koch, Deutach. Insect, XVII, p. 123.
1864. *Nuctobia*, Simon, Hist. Nat. Araign., p. 236.
1893. *Zilla*, McCook, Amer. Spiders, III, p. 236.
1902. *Zygiella*, Cambridge, Ann, Mag. Nat. Hist. Ser., 7, IX, p. 15.

Cephalothorax as in *Araneus*, somewhat small, slightly pubescent, P. L. separated from P. M. by a space equal to that between A. M. and P. L., A. M. separated from A. L. by a space not greater than that between A. M.; posterior row aligned or slightly recurved. Sternum, cheliceræ, maxillæ as in *Araneus*. Male palps tolerably long, legs hairy provided with a few spines and bristles. Abdomen short, oval, subelliptical, depressed, pubescent with a silvery lustre.

The spider spins a vertical orb with an open sector above the median line.

### 58. *ZILLA NAWAZI* SP. NOV.

(Pl. XI, fig. 6; Pl. XVI, fig. 124).

Cephalothorax is longer than broad, highly convex, of a dark fleshy colour; cephalic region is slightly higher than the thoracic region with rounded top and sloping sides; thoracic region is convex, with a deep median longitudinal fossa; rounded laterally. Anterior row of eyes is nearly aligned, medians being separated from each other and from laterals by a diameter; second row of eyes (when seen from above) appears to be straight, medians are separated by less than half their diameter and laterals by two diameters from the medians; ocular quad is longer than broad, and broader anteriorly. Maxillary lobes are slightly longer than broad, very narrow at the base, broad apically. Labium is triangular, nearly as broad as long, acuminate at the apex. Sternum is cordate, truncate at the base, narrowed posteriorly. Legs are stout, with slender metatarsal and tarsal joints, and are green in colour.

Abdomen is broadly oval, somewhat higher in front overhanging the thoracic region, rounded and broad at the base, broader just above the middle and narrow posteriorly. Basal



region of the dorsum is coloured silvery white which changes gradually to green posteriorly and laterally till it becomes dark green. Dorsum has a transverse black band in the anterior half, with club-shaped black markings on each side; the band is followed by four transverse rows of black sigilla covering the rest of the dorsum. Venter is green, with a pair of darker streaks. Vulva is without a scape.

Average length:—Female, 8 mm.
Male, 6 mm.

Locality:—Government College grounds.

## GENUS *LEUCAUGE*.

1841. *Leucauge* White. Ann. Mag. Nat. Hist., VII, p. 473.
1884. *Argyrœpeira*, Emerton, Trans. Conn. Acad. Arts Sci., VI, p. 331.
1890. *Callinethis*, Thorell, Studi Ragni Mal, e. Pap., IV, p. 191.
1893. *Argyrœpeira*, McCook Amer. Spiders, III, p. 241.
1894. *Argyrœpeira*, Simon, Hist. Nat. Araign, I, p. 736.
1896. *Opas*, Cambridge, Biol. Centr. Amer., Aranæ, I, p. 184.
1900. *Argyrœpeira*, Pocock, Fauna Brit. Ind., Arach., p. 215.
1921. *Leucauge*, Gravely, Rec. Ind. Mus. Calcutta, XXII, p. 450.

Head truncate in front; cheliceræ short, with a few teeth; thoracic region mostly smooth, with two tubercles or irregularly tuberculate; eyes of the posterior line not or rarely procurved; maxillæ long and narrow at the base, expanded and angular at the apex. Abdomen convex, rounded at the edges, not wider than long, soft.

### 59. *LEUCAUGE DECORATA* (Blackwall).

(Pl. XI, fig. 7; Pl. XVI, figs. 120—123).

1864. *Tetrangnatha decorata* Blackwall, Ann. Mag. nat. Hist., (3), XIV, pp. 44-45.
1869. *Nephila angustata*, Stoliczka, J. Asiat. Soc. Beng., XXXVIII, p. 241.
1869. *Tetrangnatha decorata*, Cambridge, Proc. Linn. Soc., London Zool., X, pp. 383, 390.
1877. *Meta celebesiana*, Thorell, Ann. Mus. Stor. nat. Genova, X. p. 422.
1896. *Argyrœpeira celebesiana*, Workman, Malaysian Spiders.
1900. *Argyrœpeira celebesiana*, Pocock, Fauna Brit. Ind., Arach., p. 216.
1906. *Leucauge decorata*, Simon, Ann. Soc. ent. Fr., LXXV, p. 282.
1921. *Leucauge decorata*, Gravely, Rec. Ind. Mus. Calcutta, XXII, pp. 451, 454-55.
1925. *Leucauge decorata*, Lessert, Revue Suisse Zool. XXIII, p. 22.

Cephalothorax is uniformly yellowish. Lateral eyes are much nearer to the medians. Legs are long and slender, greenish or yellowish green; tibia of fourth leg in female is not plumose.

Abdomen is more than three times as long as broad, broader anteriorly. Base of dorsum bears a pair of shoulder prominences; the apex is produced into a conical blunt caudal process. The colour of the abdomen is green and has two pairs of silvery white broad bands, the median pair being interrupted at two places in the middle by transverse green lines. Shoulder prominences and caudal tubercle are also green. The side declivities also bear a white band continuous anteriorly with a dorso-lateral band. Venter bears a pair of crescent-shaped white patches. The posterior declivity of the caudal tubercle is ornamented with four pairs of lateral white spots.

None of the specimens examined had yellow, orange or black colour as noted by Gravely whose description was probably based on preserved material in which the usual green colour had disappeared.

Length :—8—10 mm.

Localities :—Shahdara, Gol Bagh.

Also recorded from Ceylon, Ootacamund (Pocock); Yarcand, Shevaroy Hills, Bangalore, Mysore, Coonoor, Nilgiris, Red Hill, Madras, Barkul, Dehra Dun, Katihar, Siripur, Darjeeling, Rawalpindi (Gravely); Calcutta (Stoliczka).

### 60. *LEUCAUGE VENTRALIS* (Thorell).

1877. *Meta ventralis* Thorell, Ann. Mus. Stor. nat. Genova, X, p. 423.
1887. *Argyrœpeira ventralis*, Thorell, Ann. Mus. Stor. nat. Genova, XXV, p. 138.
1896. *Argyrœpeira ventralis*, Workman, Malaysian Spiders.
1900. *Argyrœpeira ventralis*, Pocock, Fauna Brit. Ind., Arach., pp. 216-17.
1921. *Leucauge ventralis*, Gravely, Rec. Ind. Mus. Calcutta, XXII, pp. 451-53.

This species differs from other species of the genus in having dull colouration; the anterior median eyes are much larger than the remaining eyes and slightly tuberculate.

Abdomen is dark in colour as in *L. tesselata* but, unlike the latter, the silvery bands are indefinite and the abdomen is clouded



with blackish markings. It is not produced anteriorly or posteriorly as in *L. decorata*. The species resembles *L. venusta* in the shape of the abdomen.

Length :—Male, 5 mm.

Localities :—Government College grounds.

Also recorded from Burma, Ceylon, Cochin State (Pocock); Calcutta (Gravely).

### 61. *LEUCAUGE VENUSTA* (Walckenær).

1837. *Epeira venusta* Walckenær, Apteres, II, p. 90.
1881. *Meta argyra*, Keyserling, Neue Spinnen aus Amer., II, p. 19.
1884. *Argyrœpeira hortorum*, Emerton, New Eng. Spiders, p. 332.
1889. *Argyrœpeira hortorum*, McCook, Amer. Spiders.
1889. *Argyrœpeira hortorum*, Mark, Catalogue, p. 550.
1893. *Argyrœpeira venusta*, McCook, Amer. Spiders, III, p. 242.

Cephalothorax is oval, cephalic sutures and corselet grooves are conspicuous. Sternum is cordate, yellow; sternal cones are present. Anterior row of eyes is recurved, the medians being separated by one diameter from one another and laterals by 1·25 diameter. Second row of eyes is procurved, medians are separated from each other and from laterals by 1·5 diameter.

Abdomen is cylindrical, somewhat thicker at the base. Dorsum is green, with silvery reticulations and black longitudinal lines. Integumentary pubescence is absent as in other species of this genus from Lahore. Vulva is without scape.

Length :—Female, 7 mm.

Locality :—Gol Bagh.

The species is represented by a single specimen.

## GENUS *ARGIOPE*.

1825. *Argiope* Savigny and Audouin, Egypte Araneæ, XXII, p. 328.
1835. *Miranda*, Koch, Deutschl. Insect., XIV, p. 128.
1893. *Argiope*, McCook, Amer. Spiders, III, p. 216.
1900. *Argiope*, Pocock, Fauna Brit. Ind., Arach., p. 220.
1903. *Metargiope*, Cambridge, Biol. Centr. Amer., Aranæ, II, p. 451.

Cephalothorax flattened; cephalic region on a level with the thoracic region; thorax oval, little longer than wide, closely covered with metallic white hair; eyes arranged in three tuberculate groups; sternum longer than wide, marked with conspicuous sternal cones; legs I, II, IV, III, stout, armed with hair, bristles and spines. Abdomen usually longer than wide, varying much in shape, sometimes metallic; skin soft, and thickly covered with hair. Males relatively smaller.

This species frequently decorates its orb with white silken ribbons arranged symmetrically.

### 62. *ARGIOPE PULCHELLA* Thorell.

(Pl. XI, fig. 8).

1881. *Argiope pulchella* Thorell, Ann. Mus. Stor. nat. Genova, XVII, p. 74.
1884. *Argiope pulchella*, Simon, Ann. Mus. Stor. nat. Genova, XX, p. 346.
1887. *Argiope pulchella*, Thorell, Ann. Mus. Stor. nat. Genova, XXV, p. 158.
1895. *Argiope pulchella*, Thorell, Spiders of Burma, p. 162.
1900. *Argiope pulchella*, Pocock, Fauna Brit. Ind., Arach., pp. 221-22.

Cephalothorax is nearly as long as broad; ocular quad is elongated, narrowed in front, P. M. are larger than A. M.

Abdomen is almost always pentagonal, with or without lateral lobes, which when present are a few in number behind the broadest region of the abdomen; it is truncate anteriorly. The vulva varies in the size and shape of its plate; notwithstanding this variation it has a thickened rim with a broad partition and its cavities are wide and shallow.

This species varies greatly in colour, pattern, and structure. The ground colour is yellow, with pale or dark brown bands. The differences in pattern are due to variation in the disposition and relative extent of the bands and the spots on them. The colour of legs varies from yellow to dark brown.

Average length :—Female, 18 mm.

Localities :—Rakh Shahdara.

Also recorded from Rangoon, Tharrawady, Moulmein (Thorell).



## GENUS *CYCLOSA*.

1869. *Cyclosa* Menge, Preuss. Spinn, I, p. 73.
1889. *Turckjeimia*, Cambridge, Biol. Centr. Amer., Araneæ, I, p. 47.
1893. *Cyclosa*, McCook, Amer. Spiders, III, p. 224.

Cephalothorax cordate or oval, cephalic region elevated; eyes arranged in three groups, front eyes of the central group raised, ocular quad longer than wide, A. L. separated from A. M. by a space greater than the space between A. M., anterior row of eyes recurved, posterior row aligned; legs I, II, IV, III, stout, scantily pubescent, spines long, thin, aciculate. Abdomen irregularly oval, in some species with conical projections at the hinder end; apical wall high, venter conical.

### 63. *CYCLOSA CONFRAGA* (Thorell).

(Pl. XI, fig. 9; Pl. XVI, figs. 117—119).

1892. *Epeira confraga* Thorell, Novæ species Aranearum, p. 31.
1896. *Epeira confraga*, Workman, Malaysian Spiders, p. 34.

Cephalic region is high, tuberculate, black; thoracic region is low, pale brown with a median black band in the cephalic region only. Sternum is yellow, with distinct sternal cones. Legs are light brown, banded with black or dark brown.

Abdomen is nearly four times as long as its breadth, broader at the base, highly convex, with a forwardly directed low prominence at the middle of base and a pair of backwardly directed lateral tubercles near the tail, silvery grey in colour with brown or black, sometimes indistinct, rhomboidal patches. Just behind the anterior tubercle is a cross-shaped marking, dark brown in colour. Sides of the anterior half of abdomen are coloured deep yellow. Venter is grey, sometimes darker, with a median band. Vulva is without scape.

Average length :—Female, 6·5 mm.
Male, 5·5 mm.

Localities :—Government College grounds, Lawrence Gardens, Gol Bagh.

Also recorded from Malay Archipelago (Workman).

### 64. *CYCLOSA WALCKENÆRII* (Keyserling).

1892. *Epeira walckenærii* Keyserling, Spinn. Amer., Epeiridæ, V, p. 98.
1892. *Cyclosa walckenærii*, Cambridge, Biol. Centr. Amer., Araneæ, II, p. 495.
1893. *Cyclosa walckenærii*, McCook, Amer. Spiders, III, p. 226.
1930. *Cyclosa walckenærii*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXX, p. 315.

Cephalothorax is oval, convex, with a deep median longitudinal fossa, and glossy brown, with greyish pubescence; cephalic region is brown, slightly depressed in front. A. M. are larger than P. M., and separated from laterals by twice as much as the distance between A. M. and P. M. Ocular quad is longer than wide. Clypeus is low. Sternum is triangular, elongated, yellow, bordered with brown and covered with grey pubescence. Legs are pale yellow with blackish apical annuli, spines are nearly absent.

Abdomen is oval, broader at the base which is bifid. Dorsally it bears a median conical hump with a cone on each side as seen in *C. confraga*. Dorsum is yellow, or pale yellow with silvery white hair, an indistinct folium is present enclosing a blackish rectangular area. Venter is conical, brown, with a circular ring of yellow spots around the base of the spinnerets. Epigynal plate is arched, semi-circular.

Length :—Female, 6·5 mm.

Localities :—Shahdara.

Also recorded from America (McCook).

### 65. *CYCLOSA MOHINI* SP. NOV.

Cephalothorax is broadly oval, dark blue, speckled with pale yellow and is covered by rows of white hair; cephalic region is raised above the thoracic region and is separated from it by deep semi-circular cephalic grooves which meet posteriorly. Eyes are situated on tubercles; anterior row of eyes is recurved, posterior row is aligned; A. M. are larger than other eyes and are separated by half their diameter from one another and by 1·25 diameter from the laterals; P. M. are nearly subcontiguous; ocular quad is broader than long and broad anteriorly. Thoracic



region is nearly circular, convex, and has a transverse median groove. Clypeus is low, slightly inclined. Maxillary lobes are as long as broad, with truncate apex, rounded laterally, very narrow at the base. Labium is broader than long, nearly triangular, obtuse at the apex. Sternum is cordate, broadly truncate at the base and produced between the posterior pair of coxæ; its colour is light yellow, with a grey median patch and white transverse basal streak; sternal cones are prominent. Legs are I, IV, II, III, and light orange coloured with deeper bands, and provided with long bristles and white hair.

Abdomen is long, thick and high at the base, concave above, tapering posteriorly into a conical tail; it has a median conical tubercle at the top of the base and a pair of backwardly directed ventro-lateral tubercles on the posterior one-third. It is light brick red above and is variegated laterally and ventrally with dark patches and white streaks. Dorsum has a white rhomboidal area which bears a deep, broad diagonal band. On each side of the apical angle there is a triangular patch of light brown colour. Epigynum resembles that of *C. walckenærii*, its colour is black. Colulus is prominent. Spinnerets are black.

Length :—Female, 7 mm.

Locality :—Government College grounds.

## FAMILY MIMETIDÆ.

Cephalothorax with longitudinal fossa; eyes heterogeneous, borne on a small common prominence; clypeus vertical; labium long; tibiæ and metatarsi I and II with a pro-row of long spines, the interspaces being filled up with shorter spines; anterior pair of legs longer, with metatarsi and tarsi slender and curved. Abdomen convex and very variable in shape.

These spiders live on other spiders and do not spin webs. Petrunkevitch regarded this family as a later offshoot of that family of orb-weavers which lost the faculty of spinning in consequence of their predatory habits.

## GENUS *GELANOR.*

1870. *Gelanor* Thorell, On European Spiders, p. 37.
1895. *Gelanor*, Simon, Hist. Nat. Araign., I, p. 947.

Cephalothorax convex posteriorly, scarcely inclined or declined anteriorly; posterior eyes subcontiguous, A. M. larger than laterals, latter distant from medians; cheliceræ long and narrow; posterior two pairs of legs short, claws bent. Maxillary lobes of males longer.

### 66. *GELANOR MULIEBRIS* SP. NOV.

Cephalothorax is pale; cephalic region is distinguished from the thoracic region by a reddish brown patch which extends backwards in the form of a band to the base. Eyes are prominently raised; anterior row is slightly recurved, A. M. are largest and nearer together; posterior row is slightly procurved, with the medians wide apart; ocular quad is as long as wide, wider posteriorly. Clypeus is as long as the height of the ocular quad. Cheliceræ are brown, marked with black spots, and have black extremities; fang is very short and curved; promargin is armed with a pair of teeth, retromargin is smooth. Maxillary lobes are triangular, broader at the base and converging. Palps are pale white in colour, with reddish brown spots. Sternum is oval, truncate at the base, and is not produced between the posterior pair of coxæ which are subcontiguous. Legs are long and slender, pale white in colour; first and second pair of legs bear each a pro-row of long spines, between which is a shorter spine; tibia, metatarsus and tarsus are very long, femur is marked with reddish brown dots on antero-lateral and ventral aspects, patella is reddish brown; legs III and IV are profusely spotted; spurious claws are also present.

Abdomen is as long as cephalothorax, triangular, and brown in colour. A little to the front of the middle it bears a median tubercle and a pair of shoulder-prominences with black apices. The dorsum is covered with yellowish hair in front of and behind the median tubercle. Venter is brown upto the epigynal fold, behind which it is yellow. Abdomen is marked on each



side with three yellow dots arranged in a row and a few irregular patches. Vulval aperture is surrounded by a pair of semi-circular chitinous plates. Scape is absent.

Length :—Female, 5·5 mm.
Locality :—Dane Park.

This species is represented by a single specimen caught from a web of *Cyrotophora citricola.*

## FAMILY DRASSIDÆ.

Cephalothorax convex, with a median thoracic groove, attenuated in front; eyes heterogeneous, arranged in two transverse rows; fang with a serrated inner margin; maxillary lobes long, convergent; labium long, extending beyond middle of maxillary lobes; sternum oval, attenuated, and produced posteriorly between posterior pair of coxæ; legs almost always provided with spines, tarsus with scopula, claw-tufts and a pair of claws only. Abdomen without colulus.

The restrictive definition of the Family Drassidæ given above is identical with Petrunkevitch's description.

## GENUS *GNAPHOSA.*

1804. *Gnaphosa* Latreille, Nouv. Dict. Hist. Nat., XXIV, p. 134.
1805. *Drassus*, Walckenær, Tabl. Aran., p. 45.
1837. *Pythonissa*, Koch, Uebers. Arach. Syst., 1, p. 16.
1893. *Gnaphosa*, Simon, Hist. Nat. Araign., I, p. 383.

Cephalothorax slightly convex, ovate; anterior row of eyes slightly procurved, posterior row recurved, remote from anterior row and broader; clypeus broad; labium longer than wide, attenuated; legs IV, I, II, III, strong. Anterior spinnerets long; superior spinnerets slightly shorter and slender, medians very short; anteriors wide apart.

### 67. *GNAPHOSA PUMILA* (Koch).

1838. *Melanophora pumila* Koch, Die Arachniden, VI, p. 68.
1859. *Drassus pumilus*, Blackwall, Spiders of Gr. Br. and Ire., I, p. 108.
1870. *Melanophora electa*, Cambridge, Trans. Linn. Soc., London, XXVII, p. 412.

Cephalothorax is oval, somewhat attenuated in front, convex, glossy, with faint cephalic grooves which join posteriorly to be continued as a median longitudinal groove. Anterior row of eyes is procurved, eyes being sufficiently spaced from each other; posterior row is recurved, narrower than the anterior row; ocular quad is slightly longer than broad. Clypeus is broader than the space between A. M. Cheliceræ are subconical, each bears on its inner margin a small lobe with a tooth at its base; fang is long and curved and has a serrated inner margin. Maxillary lobes are longer than broad, with parallel sides and round apices, thickly scopulated on the inferior inner margin. Sternum is oval, slightly convex, truncate at the base. Labium is longer than wide, rounded and obtuse at the apex. Legs are thickly covered with hair and spines. Coxæ and femora are light brown with a yellowish tinge, the remaining joints are dark brown. All tarsi and apical portions of metatarsi are provided with scopulæ. Tarsi bear claw-tufts and a pair of superior claws.

Abdomen is oval, depressed, projecting slightly above the thoracic region. It is dull black and thickly covered with hair.

Average length :—Female, 5 mm.

Locality :—Common in Lahore.

### 68. *GNAPHOSA LUCIFUGA* Latreille.

(Pl. XVI, figs. 131—140).

1804. *Gnaphosa lucifuga* Latreille, Nouv. Dict. Hist. Nat., XXIV, p. 134.
1831-37. *Drassus melanogaster*, Hahn, Die Arachniden, II, p. 11.
1831-37. *Pythonissa lucifuga*, Koch, Die Arachniden, IV, p. 54.
1834. *Drassus melanogaster*, Latreille, Gen. Crus. Ins., I, p. 87.
1837. *Drassus lucifugus*, Koch, Uebers des Arach. Syst., I, p. 18.
1837. *Drassus lucifugus*, Blackwall, Ann. Mag. Nat. Hist., (2), VIII, p. 39.
1837. *Drassus lucifugus*, Walckenær, Apteres, I, p. 613.
1859. *Drassus lucifugus*, Blackwall, Spiders of Gr. Brit. and Ireland, I, p. 105.
1901-03. *Gnaphosa lucifuga*, Bosenberg, Zoologica, Stuttgart, XIV, p. 315.

This species resembles *G. pumila*, but has longer legs. Cephalothorax is very narrow apically. Femoral joints of pedipalpi are reddish. Abdomen is very long, broader in the posterior



than in the anterior region, and is highly convex. The spider is black in colour.

Average length :—Female, 11 mm.

Male, 9 mm.

Locality :—Common in Lahore.

## FAMILY PRODIDOMIDÆ.

Cephalothorax long, oval, marked with faint thoracic grooves only in *Zimiris*; eyes heterogeneous, A. M. rounded and convex, remaining eyes nocturnal, flat, oval or angular; labium long, free; tarsus of maxillary palp with a pectinate claw in female *Zimiris* only; legs short, but long in *Zimiris*, provided with light scopulæ. Abdomen long, oval; anterior pair of spinnerets separated from one another, posterior pair slender, cylindrical, with an apical segment only in the genus *Zimiris*; colulus absent; anal tubercle obtusely triangular.

These spiders are found under stones and are very slow in their movements except those belonging to *Zimiris* which are very fast.

### GENUS *ZIMIRIS*.

1882. *Zimiris* Simon, Ann. Mus. Stor. nat. Genova, XVIII, p. 239.
1893. *Zimiris* Simon, Hist. Nat. Araign., I, p. 337.

Cephalothorax marked with faint thoracic grooves; eyes unequal, A. M. black, round and convex, other eyes nocturnal and angular; labium not much longer than broad; legs long, robust, scopulated lightly on tarsal portions only, claw-tufts present. Anterior pair of spinnerets long, thick, each spinneret of posterior pair provided with an apical segment.

### 69. *ZIMIRIS INDICA* Simon.

(Pl. XVI, figs. 127—130).

1884. *Zimiris indica* Simon, C. R. Soc., Ent. Bel., p. 142.
1918-19. *Zimiris indica*, Dalmas, Ann. Soc., ent. Fr., p. 333.

The body is lustrous light yellow, with white pubescence.

Cephalothorax is longer than wide, cephalic sutures are not very conspicuous; median longitudinal groove and corselet grooves are very faint. Anterior row of eyes is slightly procurved, A. M. are larger than other eyes; posterior row is strongly recurved; ocular quad has parallel sides, is somewhat longer than wide, and narrow anteriorly. Clypeus is low, nearly half as long as the height of ocular quad and has 7 spines. Cheliceræ are free at the base, fang is small and curved, fang-groove bears three teeth on retromargin and as many teeth on promargin. Maxillary lobes are long, scopulated, parallel. Sternum is ovate, narrowly truncate at the base, and is not produced between the posterior pair of coxæ. Labium is long, rounded at the apex. Legs are IV, I, II, III, spiny; tarsus is provided with a pair of superior claws and claw-tufts, and its distal end is slightly scopulated.

Abdomen is ovate, and is without any markings. Epigynal aperture is surrounded by a pair of reddish chitinous pieces.

Average length :—Female, 9 mm.

Locality :—Gol Bagh.

## FAMILY THOMISIDÆ.

Cephalothorax broad; cephalic grooves present; clypeus vertical, proclined; eyes in two transverse recurved rows, laterals generally tuberculated; maxillary lobes broader at the base; sternum cordate; legs laterigrade, I and II longer than others, I longest.

Key to genera :—

*a.* Anterior row of eyes straight .. *Parastrophius.*

*b.* Anterior row of eyes curved.

$a^1$. Eye tubercles conical .. .. *Thomisus.*

$b^1$. Eye tubercles not conical.

$a^2$. Eye tubercles separate .. *Diæa.*

$b^2$. Eye tubercles subjointed .. *Tarrocanus.*



## GENUS *DIÆA.*

1869-70. *Diæa* Thorell, On European Spiders, p. 184.

1892. *Diæa*, Simon, Hist. Nat. Araign., I, p. 1035.

Second row of eyes more recurved than first, all eyes equally spaced from one another, P. L. situated on depressed rounded tubercles; ocular quad trapezoidal, narrow in front; clypeus vertical; tarsi and anterior metatarsi with inferior and lateral spines.

### 70. *DIÆA TERRENA* SP. NOV.

(Pl. XVII, fig. 150).

Cephalothorax is wider than long, and is uniformly dark brown in colour; cephalic sutures and thoracic grooves are absent. A. M. are smaller than A. L. but equal to P. M.; ocular quad is nearly square, a little narrower in front. Cheliceræ are blackish. Maxillary lobes are longer than broad, wide and truncate at the base, and are convergent. Palpal organ occupies the whole of tarsus which is spoon-shaped. Sternum is broadly oval, flat, rounded at the apex in front of coxæ IV; latter are contiguous. Labium is triangular, extending beyond the middle of maxillary lobes. First and second pairs of legs are much longer than others, third pair is the shortest; tarsi and anterior metatarsi only are provided with inferior and lateral spines; posterior legs are without spines, paler than the anteriors and are banded with brown; claw-tufts are absent, but scopulæ are present.

Abdomen is flat, pentagonal, broader than long, its posterior half is dark brown at the top, and light brown laterally and ventrally, broader than the anterior half; base is truncate and overhangs the thoracic region.

Average length :—Male, 6 mm.

Locality :—Gol Bagh.

This species is commonly found in gardens in loose earth which it resembles in colour; female specimens have not been found.

## GENUS *TARROCANUS*.

1895. *Tarrocanus* Simon, Hist. Nat. Araign., I, p. 973.

Anterior row of eyes straight or slightly recurved, ocular tubercles jointed, high, A. M. nearer to each other than to laterals, ocular quad narrow in front; ocular tubercles of each side prolonged into subjointed diverging tubercles as in the genus *Thomisus*; clypeus vertical.

### 71. *TARROCANUS VIRIDIS* SP. NOV.

Cephalothorax is convex, slightly longer than broad, and is pale yellow in colour, with a median white streak ending on top of the thoracic region; cephalic region is not distinctly separated from the thoracic region. Eyes of the anterior row are slightly recurved, medians are slightly larger than the laterals and are nearer to one another; ocular quad is wider than long, and narrower anteriorly. Clypeus is vertical, shorter than the space between A. M. Maxillary lobes are longer than wide, and converging. Sternum is broadly oval, truncate at the base, and is not produced between the posterior coxæ. Tibia and metatarsus I and II are provided with 4—4, 7—7 pairs of spines respectively; posterior legs are spineless.

Abdomen is twice as long as broad, and is wider posteriorly, truncate at the base. Dorsum is green in colour, and is marked with horse-shoe-shaped dark brown streaks directed forwards and a pair of black spots. Venter is pale yellow.

Length :—Female, 6 mm.

Locality :—Gol Bagh.

This species is represented by a single specimen.

## GENUS *THOMISUS*.

1805. *Thomisus* Walckenær, Tabl. Aran., p. 28.
1870. *Daradius*, Thorell, On European Spiders, p. 170.
1895. *Thomisus*, Simon, Hist. Nat. Araign., I, p. 1023.

Frontal of head provided with lateral, divergent, conical tubercles, with A. L. on anterior face and P. L. on posterior face, anterior eyes strongly recurved, with medians nearer to laterals than to one another; anterior legs with short spines on tibiæ and metatarsi. Abdomen rounded or truncate in front.



### 72. *THOMISUS PUGILIS* Stoliczka.

1869. *Thomisus* (*Xysticus*) *pugilis* Stoliczka, J. Asiat. Soc. Beng., XXXVIII, p. 225.
1929. *Thomisus pugilis*, Sheriffs, Ann. Mag. Nat. Hist., ser. 10, VI, p. 243.

Cephalothorax is broader than long, produced forwards into two lateral conical processes, and is pale brown in colour, but lighter in the middle. A. L. are larger, and are situated on the antero-lateral edge of the cones; P. L. are midway on the posterior face of the cones; ocular quad is slightly wider than long and is narrower anteriorly. Clypeus is very high and has a pair of white streaks extending upto the top of the cephalic prominence. Sternum is broadly oval. Anterior metatarsi are provided with five pairs of ventral spines; posterior legs are spineless.

Abdomen is subquadrate, and has a pair of basal, conical shoulder tubercles each with a black spot situated inwardly in the middle. Colour of the abdomen is white or yellowish white with transverse grooves in the posterior half which are absent in some of the specimens.

The male is very small; its abdomen is coloured dark reddish brown, interspersed sparsely with white.

The female is commonly found on light coloured rose which it resembles so closely that it is neither detected by enemies nor evaded by flower-visiting insects on which it preys. During mating season the male pursues the female who flees rather than attack it. The male, as it gets near the female, jumps on her back and settles on the posterior half of her abdomen. At first the female tries to shake off the male, but as her attempt is usually unsuccessful, she submits and the male is seen riding her till copulation takes place in the course of three or four days. The male has also been sometimes seen riding on the back of a

young female till she casts her last moult and is ready for copulation.

Average length :—Female, 6 mm.

Male, 2 mm.

Locality :—Government College grounds.

### 73. *THOMISUS ALBENS* (Cambridge).

1885. *Thomisus albens* Cambridge, Second Yarkand Mission, Aran., p. 57.

As Cambridge pointed out this species resembles *T. pugilis* except in regard to the size of the adult specimens and their colouration. Cephalothorax is pale yellowish, slightly tinged with brown. Ocular area and clypeus are white. Legs are dull yellowish becoming lighter ventrally; anterior tibia is provided with a row of spines on the anterior face; legs III and IV are lighter in colour than the anteriors and are not banded.

There are no black lateral dots on the shoulder prominences. Abdomen is uniformly white except for a slight tinge of brown in the anterior half. Venter has five pairs of darker dots.

Average length :—Female, 4 mm.

Localities :—Gol Bagh.

Also recorded from Yarkand (Cambridge).

### 74. *THOMISUS TUBERCULATA* SP. NOV.

(Pl. XIV, fig. 77).

Cephalothorax is slightly broader than long, the greatest breadth being in the posterior region; cephalic region is separated by cephalic grooves from the thoracic region as in *T. pugilis* and is marked with a pair of brown patches between which is a median white streak. Ocular area is white, and is interspersed with yellowish hair. Clypeus is white in the middle, and dark brown laterally; these lateral dark brown markings are continued backwards as broad thoracic bands. The thoracic region has a median brown streak. Chelicerae are white, with a



brown patch on each. Maxillary lobes are dark brown, palpi are white. Sternum is dark brown, cordate, with a median white streak. Legs are white; anterior two pairs are banded reddish brown; anterior metatarsi and tarsi are furnished each with a double row of short, thick dorso-lateral spines whose bases are swollen.

Dorsum of the abdomen is white, clouded with dark brown irregular patches and has a dot on each of the shoulder prominences as in *T. pugilis*. Venter is white, and has a median black patch.

Average length :—Female, 6·5 mm.

Locality :—Government College grounds.

This species is found on roses. The female lays about 100 eggs and keeps guard over them till they hatch.

## GENUS *PARASTROPHIUS*.

1903. *Parastrophius* Simon, Bull. Soc. ent. Fr., p. 123.
1903. *Parastrophius* Simon, Hist. Nat. Araign., II, p. 967.

Cephalothorax convex, never longer than broad; clypeus provided with erect bristles; anterior row of eyes straight, posterior row broader and recurved, median eyes smaller, widely spaced from each other, ocular quad hardly longer than broad, narrower anteriorly; maxillary lobes long, acuminate; labium long, plain, aciculate anteriorly; sternum ovate, ending in front of posterior coxæ, latter contiguous; tibiæ of legs slightly angular, with apical bristles. Integument coriaceous, sparsely provided with long bristles.

### 75. *PARASTROPHIUS VISHWAI* SP. NOV.

Cephalothorax is circular, highly convex, of deep orange colour, and is without any pubescence; cephalic grooves, median longitudinal groove and thoracic grooves are absent. Ocular area is slightly raised, and bears a number of black bristles. Eyes of anterior row are straight, medians being smaller and nearer to laterals than to one another; eyes of the second row are recurved and are arranged as in the first row; ocular quad is nearly as broad as long, and is slightly narrower anteriorly. All eyes are tuberculated. Clypeus is narrow, not exceeding the

width between A. M., and bears eight apical bristles. Chelicerae are long and stout. Maxillary lobes are long, acuminate, somewhat broader at the base and are provided with bristles on the outer edge. Labium is long, extending beyond the middle of maxillary lobes, and is broadly lanceolate. Sternum is ovate, slightly truncate at the base. Legs are II, I, IV, III ; anterior legs are orange coloured, with distal halves of the segments annulated with reddish brown, femora are without bands, femur II is greenish yellow and provided with three rows of dorsal, long erect bristles ; legs II and IV are green, and are without any bristles.

Abdomen is ovate, mottled with white and light brown, basal half bears four black spots arranged rhomboidally ; on each side of the hindermost spot is a reddish brown recurved band ; behind this band resembling it in colour are a pair of bands of which the anterior is recurved and posterior procurved, followed by a faint transverse line just above the spinnerets. Venter is uniformly pale yellow.

Average length :—Male, 6 mm.

Locality :—Gol Bagh.

## FAMILY SPARASSIDÆ.

Cephalothorax rarely long, attenuated, its convexity and thickness varying with genera, usually broad, truncate and obtuse in front, with a median longitudinal groove ; eyes diurnal, in two transverse rows ; each chelicera with three to four teeth ; maxillary lobes convex, straight ; labium rarely longer than broad ; legs laterigrade, second pair longer than first, metatarsi and tarsi with scopulæ, and claw-tufts. Median spinnerets longer, but slenderer, than the anterior spinnerets.

Key to genera :—

*a*. Eyes of posterior line recurved.
  *a*¹. Anterior row of eyes greatly procurved .. *Spariolenus*.
  *b*¹. Anterior row of eyes straight or slightly procurved .. .. *Heteropoda*.
*b*. Eyes of posterior line straight, or procurved.



  *a*². Anterior lateral eyes very large .. *Palystes*.
  *b*². Anterior lateral eyes not very large.
    *a*³. Second leg longer than first.
      *a*⁴. Eyes of anterior row equal .. *Olios*.
      *b*⁴. Anterior median eyes larger than anterior lateral eyes .. *Eusparassus*.
    *b*³. Second leg not longer than first .. *Thelcticopis*.

## GENUS *EUSPARASSUS*.

1903. *Eusparassus* Simon, Hist. Nat. Araign., I, p. 1025.

Cephalothorax convex, usually not longer than broad ; anterior eyes not very large, spaced equally from one another, medians larger than laterals ; labium as broad as, or broader than, long ; inferior margin of chelicerae with teeth ; clypeus low ; each anterior tibia with two spines only.

### 76. *EUSPARASSUS IMPUDICUS* (Thorell).

1887. *Sparassus impudicus* Thorell, Ann. Mus. Stor. nat. Genova, XXV, p. 241.

1900. *Sparassus impudicus*, Pocock, Fauna Brit. Ind., Arach., p. 268.

Cephalothorax is as long as broad ; cephalic region is flat, slightly depressed and broadly truncate in front, median longitudinal groove is very deep ; sides of thoracic region are rounded. Eyes are arranged in two straight lines, anterior row being narrower than the posterior ; ocular quad is slightly longer than broad, greatest width is in the posterior part. Clypeus is narrow. Legs are II, I, IV, III, provided with numerous long spines and yellow hair ; metatarsi and tarsi of all legs are thickly scopulated. Chelicerae are long, highly convex and attenuated. Maxillary lobes are longer than broad, being broader distally. Sternum is broadly ovate.

Abdomen is yellowish to dark brown in colour, covered with whitish or yellowish hair. Vulva has a short median cleft which is filled with an amber yellow sclerite.

Average length :—Female, 25 mm.

Localities :—Common in Lahore.

Also recorded from Tharrawady, Metaupa, Andaman Isles (Pocock).

### 77. *EUSPARASSUS FLAVIDUS* (Cambridge).

(Pl. XVI, fig. 147).

1885. *Sparassus flavidus* Cambridge, Second Yarkand Expedition, Aran., p. 73.

Cephalothorax is yellow, tinged with brownish orange, becoming reddish in cephalic area, and is covered with sandy grey pubescence. A. M. are nearer to laterals than to one another, eyes of the second row are slightly procurved (Cambridge described them as straight), equidistant but unequal in size; ocular quad is nearly square. Chelicerae are moderately long, powerful, straight and perpendicular. Sternum is triangular, as broad as long, slightly produced between the posterior coxæ, and is yellow in colour. Legs are II, I, IV, III (Cambridge described them as IV, II, I, III), yellow, except metatarsi and tarsi which are reddish covered with stone grey hair; scopulæ extend upto the bases of metatarsal joints.

Abdomen is ovate, straw-coloured, covered with grey and dark hair. The rhomboidal genital aperture is bounded by a pair of crescent-shaped chitinous plates which are constricted in the middle and do not meet.

Average length :—11 mm.

Locality :—Government College grounds.

This species is found on trees. It spins a white tent-like sheet between two leaves, and lays 50—70 eggs enclosed in a thick white cocoon. The female keeps guard over the eggs.

## GENUS *OLIOS*.

1837. *Olios* Walckenær, Apteres, I, p. 563.
1880. *Midamus*, Simon, Act. Soc. Linn. Bordeaux, p. 311.
1887. *Macrinus*, Simon, Bull. Soc. zool. Fr., p. 470.
1902. *Neosparassus*, Hogg, Proc. Zool. Soc. London, p. 423.

Cephalothorax convex, thoracic groove indistinct or absent; P. M. never or slightly larger than A. M., never prominent; posterior row of eyes slightly procurved, rarely straight; ocular area nearly square; each chelicera with 3, 4, or 5 teeth.



### 78. *OLIOS LUTESCENS* (Thorell).

(Pl. XVII, fig. 148).

1894. *Midamus lutescens* Thorell, Bih. Sv. Vet-Akad, Handl., XX, p. 12.
1895. *Midamus lutescens* Thorell, Spiders of Burma, pp. 272-74.
1900. *Sparassus lutescens*, Pocock, Fauna Brit. Ind., Arach., p. 269.

Cephalothorax is as wide as long, and is pale yellow in colour. Maxillary lobes are subovate. Labium is semicircular and twice as broad as long. Legs of anterior pair are longer than others, and are scopulated upto the base of metatarsi; tarsus IV only is scopulated.

Abdomen is ovate, convex, of pale yellow colour. Vulva is bounded by a pair of lobes which are constricted in the middle and their inner margins do not meet leaving a narrow cleft between.

Average length :—10 mm.

Localities :—Common in Lahore.

Also recorded from Tharrawady (Thorell, Pocock).

### 79. *OLIOS FUGAX* (Cambridge).

1885. *Olios fugax* Cambridge, Second Yarkand Expedition, Aran., p. 73.

Cephalothorax is slightly longer than broad, highly convex, rounded on the sides, narrow and truncate anteriorly; it is pale yellow in colour, and covered with white hair. Anterior row of eyes is narrow as in *O. lutescens*, eyes are equally spaced from one another. Eyes of second row are in nearly a straight line and wide apart; ocular quad is as broad as long. Chelicerae are black. Maxillary lobes are converging. Labium is not longer than broad, and reaches the middle of the maxillary lobes. Sternum is cordate, truncate apically. Legs are IV, II, I, III; anterior metatarsi, tarsi and distal ends of tibiæ are scopulated.

Abdomen is broadly ovate, white, has a median row of black spots in the basal half of the dorsum and two converging rows of black spots beginning from the middle and ending at the spinnerets (Cambridge described these spots as reddish brown).

Length :—Male, 6·5 mm.

Locality :—Lawrence Gardens.

This species is represented by a single male specimen.

## 80. *OLIOS PUNJABENSIS* SP. NOV.

(Pl. XVII, figs. 149 and 181).

Cephalothorax is nearly circular, truncate anteriorly, and is pale yellow in colour; cephalic and thoracic grooves are faintly marked, median longitudinal streak is coloured deep orange; hair are whitish grey. Eyes of the anterior row are straight, medians are hardly smaller than laterals and are equidistant, second row of eyes is broad, and procurved. Chelicerae are long and robust, and black in colour; fang is sharp. Maxillary lobes are oblong, each with a thick, long anterior scopula; tarsus of the palp is club-shaped. Labium is very short, nearly twice as broad as long. Sternum is triangular, and has rounded sides. Legs are pale yellow and covered with yellow and grey hairs; scopulæ extend upto the base of metatarsi, and are black.

Abdomen is oval, of dirty grey colour, and is covered with yellow hair. Venter is of the same colour but is marked with quadrilateral area. Vulval aperture is circular, and has a pair of epigynal plates separated antero-posteriorly.

Average length :—Female, 10·5 mm.

Locality :—Government College grounds.

## GENUS *HETEROPODA*.

1804. *Heteropoda* Latreille, Nouv. Dict. Hist. Nat., XXIV, p. 135.
1897. *Heteropoda*, Simon, Hist. Nat. Araign, II, p. 54.
1900. *Heteropoda*, Pocock, Fauna Brit. Ind., Arach., p. 259.

Cephalothorax nearly as wide as long, cephalic region hardly raised, depressed in front; maxillary lobes without crest; posterior row of eyes recurved, laterals being large and conspicuous, anterior row straight or procurved, with the medians smaller. Vulva with a pair of lobes usually separated by a median skeletal piece.

## 81. *HETEROPODA KANDIANA* Pocock.

1899. *Heteropoda kandiana* Pocock, J. Bombay Nat. Hist. Soc., XII, p. 752.
1900. *Heteropoda kandiana* Pocock, Fauna Brit. Ind., Arach., p. 261.

Cephalothorax is broad, not longer than the tibia of third leg. Anterior row of eyes is strongly procurved, medians being



half the diameter of laterals. Clypeus is very high. Legs are very long.

Abdomen is longer than broad, truncate at the base, rounded posteriorly and is darker in colour than in *H. venatoria*. Lateral lobes of vulva are separated by a broad median tongue-shaped sclerite.

Length :—Female, 24 mm.

Localities :—Rakh Mahmud Buti.

Also recorded from Kandy (Pocock).

This species is represented by a single specimen.

## 82. *HETEROPODA VENATORIA* (Linn.).

1766. *Aranea venatoria* Linn., Syst. Nat., ed. 12, p. 1035.
1793. *Aranea regia*, Fabre, Ent. Syst., II, p. 408.
1806. *Thomisus venatoria*, Latreille, Gen. Crus. Ins., I, p. 114.
1837. *Olios leucosis*, Walckenær, Apteres, I, p. 556.
1845. *Ocypte murina*, Koch, Die Arachniden, XII, p. 26.
1845. *Ocypte draco*, Koch, Die Arachniden, XII, p. 44.
1857. *Olios javanensis*, Doleschall, Natuurk. Tijdchr. Ver. Ned. Ind., XIII.
1858. *Olios gabonensis*, Lucas, Voyage au Gabon in Thomson Arach. Ent., II, p. 407.
1859. *Olios zonatus*, Doleschall, Kom. Natuurk. Ver. Ned. Ind., V, (5), p. 54.
1875. *Sarotes regius*, Koch, Die Arach. Austr., p. 660.
1877. *Heteropoda venatoria*, Thorell, Ann. Mus. Stor. nat. Genova, X, p. 484.
1887. *Heteropoda ferina*, Simon, J. Asiat. Soc. Beng., LVI, p. 102.
1895. *Heteropoda venatoria*, Thorell, Spiders of Burma, p. 264.
1900. *Heteropoda venatoria*, Pocock, Fauna Brit. Ind., Arach., p. 260.
1925. *Heteropoda venatoria*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXVII, p. 27.
1930. *Heteropoda venatoria*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXXI, p. 31.
1931. *Heteropoda venatoria*, Gravely, Rec. Ind. Mus. Calcutta XXXIII, pp. 251-252.

Cephalothorax is as long as tibia of leg III and is greyish brown with a yellow clypeus and a yellow stripe bordered with black present on the thoracic region. A. L. are $1\frac{1}{3}$ the size of A. M.

Abdomen is oblong, pentangular, broadly truncate at the base, widest in the posterior half, and is dark grey in colour interspersed with yellow spots and hair.

Length :—Female, 25 mm.

Localities :—Common in Lahore.

Widely distributed in India and outside.

## GENUS *PALYSTES*.

1875. *Palystes* Koch, Die Arach. Austr., p. 701.
1899. *Gnathopalystes*, Rainbow, Proc. Linn. Soc. N. S. W., p. 313.
1900. *Palystes*, Pocock, Fauna Brit. Ind., Arach., p. 265.

Cephalothorax longer than in *Heteropoda*, greatly attenuated in front; anterior row of eyes straight or procurved, laterals larger than medians; posterior row straight, eyes subequal, laterals not prominent; clypeus low.

### 83. *PALYSTES FLAVIDUS* Simon.

1896. *Palystes flavidus* Simon, Ann. Soc. ent. Fr., LXV, p. 489.
1900. *Palystes flavidus*, Pocock, Fauna Brit. Ind., Arach., p. 266.
1931. *Palystes flavidus*, Gravely, Rec. Ind. Mus. Calcutta, XXXIII, p. 258.

Cephalothorax is nearly circular, highly convex, broadly truncate anteriorly; median longitudinal, thoracic and cephalic grooves are present. Anterior row of eyes is procurved, medians are smaller than laterals and equally spaced from each other; second row is slightly procurved, wider than the anterior row, and medians are nearer to laterals than to each other; ocular quad is longer than broad, being narrow anteriorly. Clypeus is broader than space between A. M. Maxillary lobes are long and club-shaped. Labium is short, broad, obtuse at the apex, and does not reach the middle of maxillary lobes. Sternum is cordate, broadly truncate at the base with an obtuse prolongation between the posterior coxæ. Legs are II, IV, I, III, spiny and covered with white hair.

Abdomen is broadly ovate, highly convex, broader near the middle, light greenish yellow in colour, and is covered with whitish hair. An oblong space covered by a black V-shaped skeletal piece is present between the lateral lobes of the vulva.



Length :—Female, 18 mm.

Localities :—Rakh Shahdara.

Also recorded from Trichinopoly (Simon); Ramnad, Madras, Barkuda Island, Chilka Lake, Ganjam District, Serampore, Calcutta and Tollygunge, Allahabad (Pocock); Pashok, E. Himalayas, Cochin State and Kalimpong (Gravely).

This species is represented by a single specimen.

## GENUS *SPARIOLENUS*.

1881. *Spariolenus* Simon, Act. Soc. Linn. Bordeaux, XXXIV, p. 280.
1897. *Spariolenus* Simon, Hist. Nat. Araign., II, p. 56.
1900. *Spariolenus*, Pocock, Fauna Brit. Ind., Arach., p. 264.

Cephalothorax nearly as wide as long, moderately, or very high in the hind region, upper surface nearly flat; cephalic region slightly depressed in front; anterior row of eyes straight or procurved, posterior line recurved, laterals larger than medians, ocular quad longer than wide; maxillary lobes with distinct median longitudinal crest.

### 84. *SPARIOLENUS TIGRIS* Simon.

1881. *Spariolenus tigris* Simon, Act. Soc. Linn. Bordeaux, XXXIV, p. 281.
1900. *Spariolenus tigris*, Pocock, Fauna Brit. Ind., Arach., p. 264.
1931. *Spariolenus tigris*, Gravely, Rec. Ind. Mus. Calcutta, XXXIII, pp. 257-258.

Cephalothorax is nearly as broad as long, circular; cephalic region is slightly raised above the thoracic region, and is reddish; median longitudinal and thoracic grooves are present. Eyes of the anterior row are procurved, inferior edge of the small median eyes is almost on a level with the superior edge of the laterals, A. M. are nearer to each other than to A. L.; eyes of the posterior row are recurved, medians are a little nearer to laterals than to each other; ocular quad is as wide as long, greatest width being in the posterior region. Clypeus is very high. Sternum is cordate. Legs are very long, spiny, I, II, IV, III.

Abdomen is pentagonal, broadest in the middle, covered with dusty red and white hair. Vulva is formed by a pair of round pits bounded by sub-circular rings meeting in the centre.

Length :—Female, 21 mm.

Localities :—Common in Lahore.

Also recorded from Matheran, Poona, Calcutta (Pocock).

This species is represented by a single specimen.

## GENUS *THELCTICOPIS.*

1884. *Thelcticopis* Karsch, SB. Ges. Nat. Marburg, p. 64.
1897. *Thelcticopis*, Simon, Hist. Nat. Araign., II, p. 72.

Cephalothorax longer than broad, thick, convex, frontal broad; A. M. larger than A. L., posterior row straight or procurved, lateral eyes sessile; clypeus low; each chelicera with 5-6 teeth; legs short, less laterigrade, leg I longer or equal to leg II, anterior tibiæ with 5-7 pairs of ventral spines.

### 85. *THELCTICOPIS TELONOTATA* SP. NOV.

(Pl. XVI, figs. 141—145).

Cephalothorax is a little longer than broad, white; cephalic region is a little darker in colour, slightly raised in front; cephalic and thoracic grooves are absent. Eyes of the anterior row are straight, the larger medians being nearer to each other than to laterals; posterior line is procurved, eyes are subequal, medians being nearer to laterals than to each other; ocular quad is wider than long, narrower anteriorly. Clypeus is shorter than the space between A. M. Cheliceræ are highly convex in front, narrow distally, reddish brown in colour becoming darker apically, and are covered with yellowish hair. Maxillary lobes are longer than wide, club-shaped, highly rounded apically. Labium is longer than broad, slightly emarginate at the apex, and extends beyond the middle of the maxillary lobes. Sternum is triangular, with an obtuse apex, and ends in front of coxæ IV which are contiguous. Legs are I, IV, II, III, white in colour except the tarsal tips which are reddish brown, each anterior tibia has three pairs of ventro-lateral spines.



Abdomen is ovate, longer than broad, highly convex, white in colour and is covered with white hair. Vulval cleft is broadly circular.

Average length :—Female, 9 mm.
Male, 8 mm.

Locality :—Lahore Cantonment.

This spider spins a white sheath on a rolled leaf at one end of which a contractile opening is left for the spider to force its way through. Cocoon is laid inside the sheath and is guarded by the mother.

### 86. *THELCTICOPIS ANCORUM* SP. NOV.

(Pl. XVI, fig. 146).

This species differs from *T. telonotata* in the following respects: A. M. are not appreciably larger than A. L. and the intervening space between them is broader than in *T. telonotata*; posterior row of eyes is broader than in *T. telonotata*, laterals are widely spaced from medians.

Vulva is in the form of broad transverse cleft with a median triangular notch at the anterior end.

The body is dirty green in colour.

Average length :—Female, 8 mm.

Locality :—Lahore Cantonment.

### 87. *THELCTICOPIS NALANDICUS* Karsch.

1892. *Thelcticopis nalandicus* Karsch. Berlin Ent. Z. XXXVI, p. 293.
1899. *Stasina nigropicta*, Pocock, J. Bombay Nat. Hist. Soc., XII, p. 573.
1900. *Thelcticopis nalandicus*, Pocock, Fauna. Brit. Ind., Arach., p. 270.

This species is represented by only two immature females which tally with the description given by Pocock except that they have not developed generative organs. Abdomen is greyish white, with black stripes and spots.

Length :—Immature female, 7 mm.

Mature male (as given by Pocock), 13·5 mm.

Localities :—Dane Park.

Also recorded from Matale, Nalanda, Punduloya (Pocock).

## FAMILY CLUBIONIDÆ.

Eyes in two rows; legs prograde, apical ends of metatarsi with chitinous rims, trichobothria present only on tibiæ, metatarsi and tarsi.

### GENUS *LAUSUS*.

1898. *Lausus* Simon, Hist. Nat. Araign., II, p. 199.

Cephalothorax short, with parallel sides, never attenuated antero-posteriorly; posterior row of eyes directed upwards, straight or slightly recurved, eyes equally spaced from one another; clypeus very narrow; retromargin of cheliceræ with numerous teeth; legs short, slender, never scopulated.

### 88. *LAUSUS PROPERUS* SP. NOV.

(Pl. XVII, figs. 152—159).

Cephalothorax is broadly truncate in front, and is highly convex; cephalic grooves are very faint, thoracic grooves are absent; colour ranges from reddish brown to black. Eyes are in two rows of four each; front row is straight, narrower than the second row, medians are nearer to each other than to laterals; posterior row is longer, medians being nearer to laterals than to each other; ocular quad is as broad as long, and is narrower anteriorly. Cheliceræ are attenuated at the apex, each has four teeth and dense scopula of thick serrated hair. Maxillary lobes have parallel sides, each lobe has an external serrula and an antero-apical scopula. Sternum is ovate, truncate at the base, and is slightly produced between the posterior coxæ. Legs are IV, I, III, II; coxæ and femora bear numerous ventral bristles, apical end of each trochanter has a circlet of bristles; remaining segments are provided with plumose hair except the metatarsi and tarsi.

Abdomen is oblong, slightly constricted at the anterior one-third, and is reddish brown to black. Vulval aperture is covered by a broad crescent-shaped plate which has a median semi-circular notch posteriorly.



Average length :—Female, 6 mm.
Male, 5 mm.

Locality :—Gol Bagh, Lawrence Gardens.

This species is found under decaying herbage. It resembles ants in external form and colour.

### GENUS *STROTARCHUS*.

1888. *Strotarchus* Simon, Ann. Soc. ent. Fr., VII, p. 210.
1897. *Strotarchus* Simon, Hist. Nat. Araign, II, p. 89.

Cephalothorax with a long median longitudinal groove; anterior row of eyes straight, eyes equal and narrowly spaced, medians larger than laterals; posterior row slightly procurved, medians remoter from each other; ocular quad subquadrate; clypeus broader than space between A. M.; each chelicera with a pair of teeth.

### 89. *STROTARCHUS ALBOATER* SP. NOV.

Cephalothorax longer than broad, rounded on the sides and posteriorly, narrow and truncate anteriorly; cephalic and thoracic grooves are absent. Clypeus is concave, and is broader than the space between A. M. Cheliceræ are strong, and divergent, each armed with a pair of conical teeth. Maxillary lobes are long, constricted in the middle, and have short scopulæ. Palp of male bears tarsal apophysis. Labium is lanceolate, reborder-ed, and extends beyond the middle of maxillary lobes. Sternum is long, obtuse at the apex, and is not produced between the posterior pair of coxæ which are contiguous. Legs of first pair are heavier than others; tarsi are slightly scopulated, and claw-tufts are rudimentary. Legs are armed with spines.

Abdomen is oblong, rounded at the base and apex, and is black in colour except for a small anterior white patch on the dorsum.

Average length :—Male, 5·5 mm.

Locality :—Lawrence Gardens.

Only males of this species were obtained for study.

### 90. *STROTARCHUS VITTATUS* SP. NOV.

(Pl. XVII, fig. 151).

Body resembles in shape that of *S. alboater*. Legs of anterior pair are thicker and sparsely spined; all tarsi and anterior metatarsi are scopulated at their distal ends only; claws are minutely toothed. Sternum is slightly produced between the posterior pair of coxæ.

Epigynum is covered by a simple sub-circular plate.

Cephalothorax, sternum and legs are dark brown in colour. Abdomen is also dark brown, and has transverse recurved bands which are broader in the posterior half. Venter is light brown.

Males resemble females except for their darker colour, and long banded legs.

Average length :—Female, 6 mm.
Male, 5 mm.

Locality :—Gol Bagh (under stones in moist soil).

## GENUS *LIOCRANUM*.

1866. *Liocranum* Koch, Arach. Fam. Drassiden, p. 2.
1875. *Sagana*, Thorell, Tijd. v. Ent., XVIII, p. 96.
1897. *Liocranum*, Simon, Hist. Nat. Araign., II, p. 142.

Cephalothorax low, median longitudinal groove well marked, frontal broad; anterior eyes straight, approximated, or slightly procurved, usually equal or medians somewhat smaller; ocular quad never longer than broad; clypeus narrow; each chelicera with two teeth on retromargin; labium not longer than broad, scarcely attenuated; legs IV, I, II, III, anterior tibiæ with long 7—7, 5—5 rarely 4—4 spines, tarsi without claw-tufts, scopulæ only on anterior tarsi.

### 91. *LIOCRANUM BISATICUM* Koch.

1901-03. *Liocranum bisaticum* Koch, L., Zoologica, Stuttgart, XIV, p. 259.

Cephalothorax is somewhat longer than broad, rounded laterally and posteriorly, marked with a median longitudinal streak which bifurcates posteriorly; cephalic grooves are marked



by deep brown bands; margin of corselet has a brown streak and three brown spots on each side; colour of cephalothorax is pale white. Eyes of anterior row are slightly procurved, medians being slightly larger than laterals, and separated from each other by half a diameter; posterior row of eyes is slightly recurved, eyes being equally spaced from one another; lateral eyes are subcontiguous; ocular quad is broader than long, and narrow anteriorly. Cheliceræ are armed with teeth. Maxillary lobes are longer than broad, narrow at the base, broad and converging at the apex. Sternum is pale orange in colour, ovate, rounded at the base and ends in front of coxæ IV which are wide apart. Labium is short, not reaching the middle of maxillary lobes, and is truncate in front. Legs are short, robust, provided with thick long 7—7, 5—5 spines, and are light orange in colour banded with brown, tarsi are without claw-tufts, anterior being thickly scopulated.

Abdomen is ovate, broad and rounded at the base. It is dark brown in colour, and has a median orange band which is broad basally; the posterior half of the band is bordered on each side with a row of white spots; the anterior half of the abdomen has a black patch shaped like an inverted V.

Average length :—Female, 5 mm.

Locality :—Lawrence Gardens.

## FAMILY ATTIDÆ.

Eyes arranged in three rows so as to form a quadrilateral, A. M. larger than others, eyes of second row minute, all eyes homogeneous; clypeus broad; retromargin of cheliceræ smooth or toothed; sternum broadly truncate, or acuminate at the base, rarely truncate posteriorly; legs short, robust, tarsal claws heterogeneous, claw-tufts always present.

This is the largest family of spiders comprising about 450 genera. Though well marked as a family, its classification into sub-families and genera is difficult, consequently it has not yet been possible to frame a natural key to genera. Petrunkevitch

altered Simon's classification into sub-families whilst accepting that author's three main sub-divisions.

Some genera, such as *Myrmarachne*, mimic ants, others can change the colour of their eyes.

Key to genera :—

*a*. Retromargin of cheliceræ with more than one tooth.
  $a^1$. Spiders ant-like .. .. *Myrmarachne.*
  $b^1$. Spiders not ant-like .. .. *Holcolœtis.*
*b*. Retromargin of cheliceræ with not more than one tooth.
  $a^2$. Retromargin of cheliceræ without tooth .. .. .. *Sitticus.*
  $b^2$. Retromargin of cheliceræ with one tooth.
    $a^3$. Coxa III separated from coxa IV by a space, pedicel conspicuous.. *Bellota.*
    $b^3$. Coxa III not separated from coxa IV by a space, pedicel not conspicuous.
      $a^4$. Leg III longer than leg IV.
        $a^5$. Sternum broad at base.
          $a^6$. Eyes of second row nearer to A. L. than to third row *Plexippus.*
          $b^6$. Eyes of second row midway between A. L. and third row.
            $a^7$. Tooth of retromargin slender .. .. *Pystira.*
            $b^7$. Tooth of retromargin thick *Oningis.*
        $b^5$. Sternum narrow at base .. *Habrocestum.*
      $b^4$. Leg III shorter than leg IV.
        $a^8$. Sternum broad at base.
          $a^9$. Carapace low.
            $a^{10}$. Eyes of second row midway between A. L. and third row .. .. *Thiania.*



            $b^{10}$. Eyes of second row nearer to A. L. than to third row .. *Gophoa.*
          $b^9$. Carapace high.
            $a^{11}$. Posterior legs with minute spines.
              $a^{12}$. Ocular area narrowing posteriorly .. *Chrysilla.*
              $b^{12}$. Ocular area of even breadth throughout .. *Cosmophasis.*
            $b^{11}$. Posterior legs with thick spines.
              $a^{13}$. Cephalic region slightly depressed laterally .. *Akela.*
              $b^{13}$. Cephalic region never depressed laterally .. *Evophrys.*
        $b^8$. Sternum narrow at base.
          $a^{14}$. Anterior row of eyes recurved *Flacilla.*
          $b^{14}$. Anterior row of eyes straight.
            $a^{15}$. Posterior metatarsus without apical spine .. *Hyctia.*
            $b^{15}$. Posterior metatarsus with apical spine .. .. *Menemerus.*

## GENUS *MYRMARACHNE.*

1839. *Myrmarachne* Macleay, Ann. Mag. Nat. Hist., II, p. 10.
1846. *Toxus*, Koch, Die Arachniden, XIII, p. 19.
1846. *Janus*, Koch, Die Arachniden, XIII, p. 21.
1869. *Pyroderus*, Simon, Mono. esp. Europ. Attides, p. 248.
1880. *Janigera*, Karsch, Zeit. Ges. Natur., LIII, p. 392.
1892. *Iola*, Peckham, Ant-like Spiders, p. 15.
1894. *Ascalus*, Thorell, Bih. Sv. Vet-Akad., Handl. 20, p. 55.

Cephalothorax long, cephalic region high, plain above, cephalic groove transverse; anterior eyes subcontiguous, in a straight line, eyes of second row minute; cheliceræ of female vertical, each with 5-6 teeth on retromargin, cheliceræ of male long, straight; sternum long, narrow; legs slender; first coxæ longer and approximated, coxæ II and III separated by a space, coxæ IV contiguous. Body ant-like.

This genus includes some of the best mimics of ants.

Key to species :—

*a*. Chelicerae short .. .. *M. providens.*

*b*. Chelicerae long.

$a^1$. Fang curved at base .. .. *M. ramunni.*

$b^1$. Fang not curved at base.

$a^2$. Fang with a median tooth .. *M. lætus.*

$b^2$. Fang without a median tooth .. *M. lætus* var. *flavus.*

### 92. *MYRMARACHNE LÆTUS* (Thorell).

(Pl. XVII, figs. 160—164).

1887. *Synemosyna læta* Thorell, Ann. Mus. Stor. nat. Genova, XXV, p. 339.

1890. *Synemosyna prælonga*, Thorell, Ann. Mus. Stor. nat. Genova, XXX, p. 64.

1895. *Ascalus lætus*, Thorell, Spiders of Burma, p. 321.

1915. *Myrmarachne lætus*, Narayan, Rec. Ind. Mus. Calcutta, XI, p. 398.

Cephalic region is clearly separated from thoracic region by a transverse-groove. Chelicerae of male are about 3 mm. long, fang-groove is armed on both margins, fang bears a conical projection on the inner side ; chelicerae of female are short and vertical, without any projection on the fang. Maxillary lobes are parallel, scopulated on their entire inner margin ; tarsus of female palp is flattened dorso-ventrally ; male palpal organ is retractile. Labium is nearly square, with a slightly emarginate apex. Legs are prograde, black, tarsal claws are heterogeneous ; scopulæ and claw-tufts are present. Pedicel is two-jointed, very long, covered by orange coloured chitinous plates.

Abdomen is long, constricted in the middle of the anterior half, orange coloured, posterior half is bluish black.

Average length :—Female, 8·5 mm.

Male, 7 mm.

Localities :—Common in Lahore.

Also recorded from Singapore (Workman) ; Tharrawady and Rangoon (Thorell) ; Madras, Calcutta, Port Blair, Katihar (Narayan).

This species is the best mimic of ants among which it usually lives and feeds.



### 93. *MYRMARACHNE LÆTUS FLAVUS* Narayan.

1915. *Myrmarachne lætus flavus* Narayan, Rec. Ind. Mus., XI, p. 399.

This sub-species differs from *M. lætus* in having no tooth-like projection in the middle of fang as observed by Narayan. Cephalic region is black in colour, thoracic is light brown ; chelicerae are pale yellow. Abdomen is yellowish anteriorly changing to black in the posterior region.

Length :—Male, 6 mm.

Locality :—Sanda Road.

### 94. *MYRMARACHNE PROVIDENS* (Peckham).

1892. *Salticus providens* Peckham, Ant-like Spiders, p. 34.

1915. *Myrmarachne providens*, Narayan, Rec. Ind. Mus. Calcutta, XI, p. 399.

Male :

These spiders differ from *M. lætus* in having short chelicerae, without any tooth on fang as in *M. lætus flavus* ; chelicerae are more strongly rounded on their external margins. Body is black in colour and does not show any white hair as noted by Peckham.

Length :—7 mm.

Localities :—Sanda Road.

Also recorded from Nawankot, Lahore (Narayan).

### 95. *MYRMARACHNE RAMUNNI* Narayan.

1915. *Myrmarachne ramunni* Narayan, Rec. Ind. Mus. Calcutta, XI, pp. 400-02.

Cephalic region is high and rounded, separated by a transverse groove, thoracic region is highest at its anterior one-third from where it slopes laterally and posteriorly, hinder end is attenuated. Eyes of first row are nearly straight, medians being somewhat higher than laterals ; eyes of second row are inconspicuous, and are nearer to A. L. than to eyes of third row (Narayan described them as midway between) ; ocular area is wider by a third of the length, and has parallel sides (according to Narayan ocular qaud is slightly wider posteriorly). Chelicerae are long, horizontal, and stout, the proximal half of each is compressed from side to side, the distal half is slightly convex above; fang is as long as the chelicera and is curved at the

base and bent at the apex. Labium is longer than broad. Sternum is slightly truncate at the base.

The abdomen appears to be longo-ovate and not constricted in middle but its exact shape cannot be determined owing to shrinkage.

Body is jet black in colour.

This species is represented by a single female specimen.

Length :—Female, 10 mm.

Localities :—Lawrence Gardens.

Also recorded from Madras (Narayan).

## GENUS *HOLCOLÆTIS.*

1885. *Holcolætis* Simon, Ann. Soc. ent. Fr., p. 394.
1901. *Holcolætis* Simon, Hist. Nat. Araign., II, p. 454.

Cephalothorax long, oval, low, thoracic region broadly depressed anteriorly; anterior eyes procurved, laterals slightly separated from medians, ocular area much broader than long; but narrower than width of thoracic region; clypeus narrow; chelicerae short and robust, each with 5-6 retromarginal teeth; sternum long, narrow anteriorly; labium longer than broad. Legs IV, I, II, III; anterior legs thick, spineless, posterior legs slender, with numerous spines.

### 96. *HOLCOLÆTIS VIDUA* Lessert.

1927. *Holcolætis vidua* Lessert, Rev. Suisse Zool. Geneve, XXIV, p. 426.

Cephalothorax is black in colour with a median white band, cephalic region is distinguished from the thoracic region by its elevation. Anterior row of eyes is slightly procurved, medians are twice as large as laterals. Length of clypeus is a third of the space between A. M. Maxillary lobes are long and divergent. First pair of legs are thick, and reddish brown, patellæ are longer than is usually the case in spiders, tibiæ are short and swollen, metatarsi and tarsi are short and slender; posterior legs are pale yellow in colour, and are covered with brown hair and spines.



Abdomen is ovate, and has a thick median reddish brown band on each side of which are two bands, the outer being more reddish than the inner band. Four transverse recurved bands, brown in colour, are present on the posterior two-thirds of the dorsum. Venter is grey, with a median dark band.

Average length :—Female, 7 mm.

Male, 5 mm.

Localities :—Gol Bagh.

Also recorded from Africa (Lessert).

## GENUS *BELLOTA.*

1892. *Bellota* Peckhams, Ant-like Spiders, p. 14.
1901. *Bellota*, Simon, Hist. Nat. Araign., II, p. 534.

Cephalothorax broadly depressed, long and narrowly ovate, sharply declining behind, anterior row of eyes slightly recurved, ocular quad wider by a fifth of its length, narrower than width of thoracic region, but broader posteriorly, eyes of second row nearer to A. L. Each chelicera with a single tooth; coxa III separated from coxa II by a space. Pedicel conspicuous.

### 97. *BELLOTA FASCIALIS* SP. NOV.

(Pl. XVII, fig. 173).

A. M. are six times as large as the laterals, eyes of second row are minute, slightly nearer to A. L. than to eyes of third row and are somewhat inwardly situated; eyes of third row are very high and are equal in size to A. L. Each chelicera bears a row of conical teeth on promargin. Maxillary lobes are long, broader as well as rounded apically. Labium is long and triangular. Sternum is truncate at the base, and ends in front of coxæ IV which are contiguous. Legs are I, IV, III, II; leg I is very strong, thick and straight, and possesses a row of fimbriated hair along the anterior edge, with two pairs of spines on tibia and on metatarsus; legs II are similarly armed with spines but are devoid of hair; posterior legs are slender, and profusely spined.

Abdomen is ovoid, broadly truncate at the base and narrowed posteriorly.

The body is golden yellow in colour with blackish tinge in the cephalic region. Legs are lighter. Abdomen has a black stripe in the middle, with a sigilla of the same colour.

Average length :—Female, 6 mm.

Locality : —Gol Bagh.

This species also mimics ants but not so well as *M. lætus*.

## 98. *BELLOTA LIVIDA* SP. NOV.

(Pl. XVII, figs. 174-175).

This species differs from *B. fascialis* inasmuch as the cephalothorax is dark blue in colour and iridescent, with yellowish sides and each eye of the third row is followed by a yellowish spot. Legs of first pair are blackish.

Abdomen has no markings. This species is also much smaller in size than *B. fascialis*. Males are of the same size as females and resemble them in colouration.

Average length :—5 mm.

Locality :—Common in grassy plots.

## GENUS *PLEXIPPUS*.

1846. *Plexippus* Koch., Die Arachniden, XIII, p. 107.
1876. *Hasarius*, Simon, Arach. de Fr., p. 217.
1883. *Menemerus*, Simon, Ann. Soc. ent. Fr., p. 303.
1901. *Thotmes*, Cambridge, Biol. Centr. Amer., Aran., II, p. 240.
1903. *Plexippus*, Simon, Hist. Nat. Araign., II, p. 734.

Cephalothorax high and long, cephalic region convex, slightly depressed, thoracic region broad, ovate; anterior row of eyes recurved, medians nearer to each other, ocular quad broader by a quarter of its length, narrower than thoracic region posteriorly, eyes of second row nearer to A. L. than to eyes of third row; retromargin of each chelicera with one tooth, promargin with two teeth; maxillary lobes rounded externally; sternum broadly truncate in front; legs I, III, IV, II, leg I long and robust, patella with single spine, tibia with 3—3 spines, posterior legs profusely spined.



## 99. *PLEXIPPUS PAYKULLI* (Audouin).

(Pl. XVII, figs. 165—170).

1825. *Attus paykulli* Audouin, Explication sommaire des Planches d'Arachnides de l'Egypte et de l'Syrie, etc., Ed. III, p. 409.
1837. *Attus paykulli*, Walckenaer, Apteres, I, p. 426.
1876. *Hasarius paykulli*, Simon, Arach. de Fr., III, p. 81.
1883. *Menemerus paykulli*, Koch, Die Arach. Austr., p. 1461.
1889. *Attus paykulli*, Pavesi, Ann. Mus. Stor. nat. Genova, IV, p. 501.
1891-92. *Plexippus paykulli*, Thorell, Ann. Mus. Stor. nat. Genova, p. 369.
1901. *Thotmes paykulli*, Cambridge, Biol. Centr. Amer., Aran., II, p. 240.
1918. *Plexippus paykulli*, Strand, Archiv Naturg., 82A, p. 106.
1925. *Plexippus paykulli*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXVII, p. 156.
1926. *Plexippus paykulli*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXVIII, p. 27.
1931. *Plexippus paykulli*, Petrunkevitch, Trans. Conn. Acad. Arts Sci., XXXI, p. 156.

Female :—

Cephalothorax is dusty brown and has a pair of brown bands extending along its whole length; cephalic region is darker.

Abdomen is also dusty brown and has a median longitudinal streak running from the base and a pair of deep brown lateral bands with white spots in the middle of their inner side. Venter is uniformly grey, with a dark median band. Sometimes minute black dots are also present on the venter.

Male :—

Cephalothorax is white, with a pair of black longitudinal bands; cephalic region is black; clypeus bears a number of yellow hair; palps are golden yellow.

Legs are white, striped longitudinally with black.

Abdomen is ovate, broader anteriorly, and is white in colour with a pair of longitudinal black bands. Venter is dark brown.

Average length :—Female, 11 mm.

Male, 9 mm.

*Localities :—Very common in houses in Lahore.

* Specimens of this species were collected by the author at Mansahra (5,000 ft.).

In this species the colour of anterior eyes can change from nacreous to perfect black ; while this change in colour takes place eyes show a circular movement.

## GENUS *PYSTIRA*.

1901. *Pystira* Simon, Hist. Nat. Araign., II, p. 656.

Cephalothorax high, broad and short, abruptly declined posteriorly ; anterior eyes in a straight line, laterals narrowly spaced from medians, eyes of second row midway between A. L. and eyes of third row, ocular quad much broader than long, narrower behind than the thoracic region, with parallel sides ; each chelicera with a slender promarginal tooth ; sternum broadly truncate in front ; leg III longer than IV.

### 100. *PYSTIRA VERSICOLOR* SP. NOV.

Cephalothorax is very high, has transverse anterior truncature, and is covered with white pubescence interspersed with golden hair ; cephalic region occupies more than three-fourths of cephalothorax ; cephalic border is ornamented with eight dark reddish brown patches. A. L. are situated on the anterior pair of patches, small eyes of second row are situated on the superior edge of second pair of patches and the third row on third pair of patches ; diameter of A. M. is nearly eight times that of laterals. Clypeus is inclined, four times as long as the space between A. M., and is white in colour with long black bristles at the apical end. Cheliceræ are yellowish, promargin of each bears a couple of teeth. Labium is triangular, being broader than long. Sternum is broadly ovate, and is produced between the posterior pair of coxæ. Legs are I, III, IV, II ; anterior femur bears three dorsal spines, patella has only a single spine, tibia and metatarsus bear many spines ; posterior legs are more spiny than the anterior ones ; legs are yellowish in colour.



Abdomen is ovate, dark grey in colour, with three pairs of black patches on the dorsum and has, scattered on its surface, a few black and a few white hair. Venter is light grey, mottled with white patches.

Average length :—Female, 7 mm.

Locality :—Government College grounds.

## GENUS *ONINGIS*.

1901. *Oningis* Simon, Hist. Nat. Araign., II, p. 567.

Cephalothorax not very short, cephalic region broader in front, thoracic region sloping posteriorly ; cephalic region longer than thoracic ; ocular quad broader than long narrowing posteriorly, but never narrower than thoracic region, eyes of second row midway between A.L. and eyes of third row ; each chelicera with a strong retromarginal tooth ; sternum broadly truncate in front ; legs III, IV, I, II.

### 101. *ONINGIS LAHORENSIS* SP. NOV.

Cephalothorax is high, sloping anteriorly, sides are perpendicular. Labium is short and blunt at the apex. Maxillary lobes are long, broader and rounded at the apex. Sternum is oval, broadly truncate at the base. Legs are sparcely spined, anterior tibiæ are provided with fine 3—3 inferior spines, metatarsi with 2—2.

Abdomen is oval, highly convex.

Body is pale yellow in colour except the head which is brown and is covered with golden hair.

Average length :—Female, 4·5 mm.

Locality :—Gol Bagh.

## GENUS *HABROCESTUM*.

1876. *Habrocestum* Simon, Arach. de Fr., III, p. 131.
1903. *Habrocestum* Simon, Hist. Nat. Araign., II, p. 670.

Cephalic region broad, with parallel sides, hardly attenuated anteriorly, thoracic region as a rule abruptly declined posteriorly;

anterior eyes slightly separated from one another, in a somewhat recurved line, ocular quad broader anteriorly; sternum narrow at base; legs III longer than legs IV.

Key to species :—

*a.* Clypeus with red hair .. .. *H. rubroclypeatum.*

*b.* Clypeus without red hair.

*a*[1]. Abdomen uniformly coloured .. *H. algericum.*

*b*[1]. Abdomen banded .. .. *H. coronatum.*

### 102. *HABROCESTUM ALGERICUM* Dalmas.

1920-21. *Habrocestum algericum* Dalmas, Ann. Mus. Genova, XLIX, p. 66.

Cephalothorax is short by a quarter of its width, and is ornamented with white spots and lines, thoracic sigilla are prolonged in front in two curved bands enclosing an oval, but are diffuse posteriorly. Ocular quad is wider by a third of its length, greatest width being in front; A.M. are somewhat more than twice the size of A.L.; median row is midway between A.L. and eyes of third row. Clypeus is half as long as the distance between A.M. Labium is as wide as long, reaching the middle of maxillary lobes. Maxillary lobes are long, broad and rounded apically. Sternum is twice as long as broad, and narrow anteriorly. Legs are IV, III, I, II; posterior legs bear a few spines.

Abdomen is ovate, uniformly dark grey above and lighter below.

Length :—Female, 6·5 mm.

Localities :—Gardens, Lahore.

Also recorded from Africa (Dalmas).

### 103. *HABROCESTUM CORONATUM* Peckhams.

1883-87. *Habrocestum coronatum* Peckhams, Wis. Acad. Sci. Arts, VII, p. 59.

Cephalothorax is high; first row of eyes is nearly straight, medians almost touching each other; ocular quad has nearly parallel sides. Clypeus is vertical, and is two-thirds the width



of A.M. Cephalothorax is black in colour, with a pair of white dorso-lateral bands, and has white hair on the edge of the anterior eyes. Palpi and legs are brown, and have black hair.

Abdomen is oval, and black in colour; it has three recurved white bands, one at the top of the base, second in front, and third in the middle of dorsum. Second and third bands may be interrupted in the middle and may bear white patches between them.

Average length :—Female, 5·5 mm.

Localities :—Gol Bagh.

Also recorded from America (Peckhams).

### 104. *HABROCESTUM RUBROCLYPEATUM* Lessert.

1927. *Habrocestum rubroclypeatum* Lessert, Rev. Suisse Zool. Geneve, XXXIV, p. 435.

Cephalothorax is brown, and has two dorso-lateral olive coloured bands fading posteriorly into yellowish white patches; cephalic region is darker, eyes are situated on black spots. Clypeus bears red hair. Legs are dirty pale yellow banded with brown, and are spiny and hairy.

Abdomen has a median reddish brown band extending along the entire length, on each side of which is a white band with faint reddish streak.

Length :—Female, 5 mm.

Locality :—Government College grounds.

Also recorded from Africa (Lessert).

## GENUS *THIANIA*.

1846. *Thiania* Koch, Die Arachniden, XIII, p. 171.

1901. *Thiania*, Simon, Hist. Nat. Araign., II, p. 588.

Cephalothorax is short, broad, rounded on sides, low; cephalic region plain; anterior eyes slightly recurved, laterals slightly separated from medians, anterior eyes larger, ocular quad broader than long, narrowing posteriorly and narrower than thoracic region, eyes of second row midway between A.L.

and eyes of third row, eyes of third row smaller than A.L.; clypeus narrow; promargin of each chelicera with a pair of conical teeth; labium much longer than broad, triangular; sternum short, broadly truncate at base; maxillary lobes rounded on sides, longer than broad; anterior legs stout, tibiæ with 3—3 inferior spines, metatarsi with 2—2 spines; tibiæ of posterior legs with numerous spines.

### 105. *THIANIA DEMISSA* Simon.

(Pl. XVII, fig. 176).

1903. *Thiania demissa* Simon, Ann. Soc. ent. Fr., p. 309.

Cephalothorax is brown, covered with brick red and light yellow hair which are arranged in the form of lateral bands. Abdomen is marked with four transverse brick red bands and has three black apical spots dotted with white. Venter is brown along the middle and dull grey on the sides.

Average length :—Female, 5 mm.

Locality :—Gol Bagh.

### 106. *THIANIA AURA* SP. NOV.

(Pl. XVII, fig. 177).

Female :—

Cephalothorax is slightly longer than broad; cephalic region is slightly elevated from thoracic region. A.M. are contiguous, their diameter is six times that of laterals, eyes of anterior row can change their colour from dull grey to black. Carapace is yellowish, and has a pair of reddish brown bands between A.L. and base; cephalic region is darker, and bears long black hair; region of anterior row of eyes is brick red. Cheliceræ are yellowish white. Sternum is light yellow like the coxæ. Legs are greenish, except the tarsal joints which are brownish.

Abdomen is ovate, broader at the base. Spinnerets and anal tubercle are surrounded by a chitinous ring; posterior spinnerets are long. Vulval aperture is bounded by two C-shaped plates whose anterior horns are joined to each other. The dorsum is golden yellow in colour and has a pair of reddish brown bands meeting posteriorly at the spinnerets; between the bands is a row of patches of brick red colour.



Male :—

Cephalic region is lighter in colour than in the female; clypeus is black; cheliceræ are reddish brown; style of palp is curved, and lies in a spacious tarsal alveolus. First pair of legs is heavy and reddish brown in colour, remaining legs are greenish but lighter than in the female.

Dorsum is ornamented as in the female except that the brick red patches are absent but is provided with hair of the same colour. A brick red line extends forward to the margin of corselet.

The males in this species are larger than females which is an unusual phenomenon among spiders.

Average length :—Female, 8 mm.

Male, 8·5 mm.

Locality :—Government College grounds.

## GENUS *GOPHOA*.

1901. *Gophoa* Simon, Hist. Nat. Araign., II, p. 590.

Cephalothorax long, ovate, depressed, plain above, thoracic region much longer than cephalic; anterior eyes unequal, contiguous, in a slightly recurved line when seen from above; ocular quad much broader than long, greatest breadth being in front, narrower posteriorly than thoracic region, eyes of second row nearer to A.L. than to eyes of third row; labium longer than broad, narrower and truncate apically; sternum broadly truncate in front; margin of cheliceræ long, divergent; legs short and minutely spined.

### 107. *GOPHOA SPLENDIDA* SP. NOV.

Cephalothorax is nearly rounded, truncate in front, and is golden yellow in colour with dark tinge in cephalic region; eyes

of the second row are one-fifth nearer to A.L. than to eyes of third row. Legs are golden yellow, spiny, IV, I, II, III.

Abdomen is shining golden yellow in colour, and has median black streak in the basal half followed by a pair of black lateral spots. Posterior half of dorsum has a pair of black streaks and is interspersed with long black hair. Venter is pale white.

The only other recorded species of this genus is *G. falcigera** which differs from *G. splendida* in having reddish colour and a long narrow abdomen.

Average length :—Female, 8·5 mm.

Localities :—Lawrence Gardens, Gol Bagh.

## GENUS *CHRYSILLA*.

1887. *Chrysilla* Thorell, Ann. Mus. Stor. nat. Genova, p. 378.
1901. *Chrysilla*, Simon, Hist. Nat. Araign., II, p. 553.

Cephalic region slightly broad anteriorly, flat above ; clypeus narrow, hairy ; anterior eyes in a straight line, eyes of second row midway between A.L. and eyes of third row, ocular quad longer than thoracic region ; sternum broadly truncate in front ; legs IV longer than legs III, anterior metatarsi slender and straight ; each chelicera with a strong retromarginal tooth.

## 108. *CHRYSILLA ALBENS* SP. NOV.

(Pl. XVII, fig. 179).

Cephalothorax is longer than broad, very high, and has parallel sides ; cephalic region occupies more than half of the area, slightly narrow posteriorly and is pale white : thoracic region is white and hairy. Eyes of anterior row are aligned, medians are subcontiguous and are three times the size of the laterals ; eyes of third row are as large as A.L., median row is situated midway between A.L. and eyes of third row. Chelicerae are long, each with a single conical tooth on retromargin and a pair on promargin. Maxillary lobes are long, broad and rounded apically and bear thick scopulæ. Sternum is oval, broadly truncate in front, exceeding the width of base of labium. Labium is long, obtuse at apex.

* *Vide* Hist. Nat. Araign., II, p. 589.



Legs are IV, III, I, II, slender ; each tibia and metatarsus is provided with two pairs of spines, femur bears a long dorsal spine.

Abdomen is oval, long, obtuse at base, slightly narrow posteriorly, and is covered with thick white pubescence.

Average length :—Female, 5 mm.

Locality :—Mojpur.

This species like *M. Raji*, lives on citrus plants. It spins a tent-like web on the upper surface of a twisted leaf. Eggs are laid inside this retreat.

## 109. *CHRYSILLA VERSICOLOR* (Koch).

1846. *Plexippus versicolor* Koch, Die Arachniden, XIII, p. 103.
1848. *Mœvia picta*, Koch, Die Arachniden, p. 72.
1891. *Chrysilla versicolor*, Thorell, Bih. Sv. Vet-Akad. Handl., p. 117.
1895. *Chrysilla versicolor*, Thorell, Spiders of Burma, p. 344.
1896. *Chrysilla versicolor*, Workman, Malaysian Spiders.
1911. *Chrysilla versicolor*, Merian, Zool. Zahr., XXXI, p. 307.

Cephalothorax is rounded at base, convex above, and pale yellow in colour ; cephalic region is slightly higher in front and occupies a little less than half of the total area ; a pair of reddish brown bands are present on the thoracic region ; cephalic region is darker. A.M. are three times as large as laterals, and are separated from each other by one-fourth their diameter, A.L. are separated from medians by half the diameter ; eyes of second row are midway between A.L. and eyes of third row, and on a level with them. Sternum is longer than broad, broadly truncate at base and rounded apically. Legs are IV, I, III, II ; anterior tibiæ bear three pairs of lateral spines, metatarsi have two pairs of such spines ; posterior legs are profusely spined ; patellæ are spineless.

Abdomen is ovate, and grey in colour with a pair of sinuous bands.

Average length :—Female, 8 mm.

Localities :—Lawrence Gardens.

Also recorded from Tharrawady, Rangoon, Sumatra (Thorell).

## GENUS *COSMOPHASIS*.

1901. *Cosmophasis* Simon, Hist. Nat. Araign., II, p. 553.

Cephalothorax high; cephalic region hardly attenuated, with somewhat parallel sides, proclining in front, convex; thoracic region longer than cephalic, broader posteriorly by a quarter of its length with parallel sides, eyes of second row nearer to A.L., chelicerae long, each with one retromarginal tooth; maxillary lobes long, narrow at base, rounded and broad apically; labium twice as long as broad, attenuated anteriorly; legs long, anteriors slightly stout, metatarsi slightly curved, tibiæ short; posterior tibiæ long; leg IV longer than leg III; anterior tibiæ with 3—3 inferior long spines, metatarsi with 2—2 such spines; metatarsus II with additional lateral and apical spines; anterior patellæ spineless, each posterior patella with one spine.

### 110. *COSMOPHASIS UMBRATICA* Simon.

1903. *Cosmophasis umbratica* Simon, Ann. Soc. ent. Fr., pp. 308-309.

Body shining black in colour, but tarsi of palpi are snow-white. A.M. are three times as large as A.L.; legs are IV, III, I, II, jet black. Sternum is broadly truncate at base.

Abdomen is oval, and has a pair of circular white spots in the posterior region in some specimens. Venter is lighter in colour.

Average length :—Female, 5 mm.

Localities :—Canal Bank.

Also recorded from Sumatra (Simon).

## GENUS *AKELA*.

1896. *Akela* Peckhams, Attidæ of Central America, p. 95.

Cephalothorax high; cephalic region declining, plain above, a little depressed in the region of eyes; anterior eyes large, subcontiguous, in a straight line, ocular quad broader by a fifth of its length, with parallel sides, not narrower posteriorly than thoracic region, median eyes of second row midway between A.L. and eyes of third row; legs I longer, patella with a minute spine, tibia with 3—3 inferior spines, posterior legs with numerous spines.



### 111. *AKELA FULVA* SP. NOV.

Cephalothorax broader by a fourth of its length; cephalic region is black in colour while thoracic region is reddish brown. A.M. are three times the size of A.L.; ocular quad is slightly broader in front. Sternum is ovate, olive brown in colour, narrowly truncate at base and is not produced between posterior pair of coxæ which are contiguous. Legs are pale yellow and are covered with brown hair.

Abdomen is ovate, uniformly brown in colour, and has a pale yellow band along the median line.

Length :—Female, 7·8 mm.

Locality :—Gol Bagh.

Only one specimen of this species was collected.

*A. fulva* is much larger than the only other recorded species, *A. quadratoria*, which is only 3—5 mm. in length, and unlike the latter has a median yellow streak.

## GENUS *EVOPHRYS*.

1834. *Evophrys* Koch, Deutsch. Insect, p. 123.
1901. *Evophrys*, Simon, Hist. Nat. Araign., II, p. 572.

Cephalothorax somewhat high; cephalic region with parallel sides, plain, and slightly declining; thoracic region long; anterior eyes subcontiguous, in a straight or slightly recurved line, ocular quad broader by a fourth of its length, slightly narrower posteriorly than thoracic region, eyes of second row midway between A.L. and eyes of third row; clypeus narrow, provided with bristles; labium never longer than breadth at base; maxillary lobes short and broad; sternum truncate anteriorly; legs I stout, fourth pair much longer than third, femur with a single long spine.

Key to species :—

*a*. Abdomen with transverse bands.
  $a^1$. Transverse bands dark brown .. .. *E. rufa*.
  $b^1$. Transverse bands black .. .. *E. rubroclypea*.
*b*. Abdomen with longitudinal bands.
  $a^2$. Abdomen with dark brown median band .. .. .. *E. longipalpis*.
  $b^2$. Abdomen without dark brown median band.
    $a^3$. Median band white .. .. *E. trifasciata*.
    $b^3$. Median band orange coloured .. *E. auricolor*.

### 112. *EVOPHRYS AURICOLOR* SP. NOV.

Cephalothorax is much longer than broad, black in colour and has a deep orange or white rhomboidal area, the anterior angle of which is in line with the third row of eyes. Anterior row of eyes is straight, medians are five times the size of laterals. First pair of legs is very stout, black, banded with white, remaining legs are yellowish, becoming darker below the tibial joints; anterior tibiæ and metatarsi are provided with ventral spines while the posterior legs are profusely spined, but sparsely hairy as compared with the anterior pair of legs.

Abdomen is ovate, nearly three times and a half as long as broad, and is dark brown in colour with a median orange coloured band. Laterally it is yellow. Venter is uniformly grey.

Average length :—Male, 5 mm.

Locality :—Government College grounds.

This species is represented by a single specimen.

### 113. *EVOPHRYS TRIFASCIATA* Koch.

(Pl. XVII, fig. 180).

1846. *Evophrys trifasciata* Koch, Die Arachniden, XIII, p. 201.

Head is black in colour and is distinctly marked off from the thoracic region by its elevation. Thoracic region is pale yellow marked with a median and a pair of lateral brown bands. Anterior row of eyes is straight, medians are five times the size of laterals and are slightly nearer to laterals than to each other; ocular quad is one and a half times as broad as long. Legs are pale yellow.

Abdomen is ovate, highly convex, and is brown in colour with a median white band. Laterally the brown changes to white and then to pale. Venter is light brown.

Average length :—5·5 mm.

Localities :—Mojpur.

Also recorded from Brazil (Koch).



### 114. *EVOPHRYS LONGIPALPIS* Simon.

1888. *Evophrys longipalpis* Simon, Ann. Soc. ent. Belgique., p. 237.

Cephalothorax is dark grey, with a reddish tinge in the thoracic region. Legs are banded with brown and sparsely covered with white hair.

Abdomen is white, with a median dark brown band. Venter is whitish.

Average length :—Female 5 mm.

Localities :—Sanda Road.

Also recorded from New Caledonia (Simon).

### 115. *EVOPHRYS RUBROCLYPEA* SP. NOV.

Cephalothorax is brown with darker cephalic region, and is without any bands. Legs are yellowish white, without any bands.

Abdomen is ovate, and has deep orange coloured patches everywhere and three black transverse bands in the posterior half on a brownish background. Venter is lighter in colour.

Length :—Female, 6·5 mm.

Locality :—Shalamar Gardens.

### 116. *EVOPHRYS RUFA* SP. NOV.

Cephalothorax is brown with black cephalic region occupying two-thirds of the total area. Eyes of anterior row are slightly recurved, medians are three times the size of laterals. Sternum is pale, and is slightly produced between the posterior pair of coxæ. Legs are pale, banded with brown.

Abdomen is ovate, covered all over with red hair, and has three dark brown transverse bands.

Average length :—Immature female, 4·5 mm.

Locality :—Mojpur.

The above description is based on immature females.

## GENUS *FLACILLA*.

1901. *Flacilla* Simon, Hist. Nat. Araign., II, p. 558.

Cephalothorax long, with subparallel sides, low, posterior declivity nearly abrupt, with light impression of cephalic grooves, thoracic region marked with a faint streak; eyes of first row contiguous, in a recurved line; ocular quad with parallel sides, posteriorly narrower than width of corselet, eyes of second row midway between A.L. and eyes of third row; clypeus broad anteriorly; chelicerae with oblique toothed margins; labium longer than broad, but stopping short of middle of maxillary lobes; maxillary lobes narrow and long, slightly divergent; sternum narrow at base; legs IV longer than III, first pair very stout, with claviform femur, patella equal to tibia and separated by a fine streak; tibia in female with one submedian spine, tarsus and metatarsus short, former armed with a pair of stout curved apical spines; remaining legs weak, with some fine apical metatarsal spines, elsewhere without spines.

### 117. *FLACILLA PURPUREA* SP. NOV.

A.M. are twice as large as laterals; ocular quad is twice as wide as long; cephalothorax is deep purple. Chelicerae are deep red. Sternum is ovate, lighter in colour than thoracic region. Legs are pale white.

Abdomen is ovate, and is shining purplish blue in colour which is deeper below.

Length :—Immature female, 4·75 mm.

Locality :—Gol Bagh.

The above description is based on an immature female.

The only other recorded species of this genus is *F. lubrica* which differs from *F. purpurea* in having lateral ornamentations on a black background.

## GENUS *HYCTIA*.

1876. *Hyctia* Simon, Arach. de Fr., III, p. 18.
1901. *Hyctia* Simon, Hist. Nat. Araign., II, p. 609.

Cephalothorax long, narrow, with parallel sides; anterior eyes unequal, in a straight line, contiguous; ocular quad broader than long, never narrower than thoracic region behind, eyes of second row midway between A.L. and eyes of third row; clypeus narrow, with long hair; sternum narrow at base; legs IV longer than III; first pair stout, patella with a single spine below, each tibia with 4—4 long lateral spines, each metatarsus with 2—2 spines; each tibia of second pair with a row of three slender spines, metatarsus with 2—2; posterior metatarsi without apical spines. Abdomen long with parallel sides, never constricted.



### 118. *HYCTIA FORNICIS* SP. NOV.

(Pl. XVII, fig. 178).

Cephalothorax is dirty grey in colour; cephalic region is covered with yellowish hair which become lighter on the margins. Eyes of anterior row are in a straight line, medians are four times the size of laterals and are separated from one another by one-third their diameter; ocular quad is broader than long. Clypeal hair are yellowish. Maxillary lobes are longer than broad, club-shaped, broad and rounded at apex. Labium is long, triangular, and extends beyond the middle of maxillary lobes. Sternum is oval, obtuse posteriorly in front of coxae IV; it is brown in colour and bordered with a fringe of long hair. Legs are IV, I, III, II, light yellow in colour covered with yellowish hair.

Abdomen is ovate, is dirty yellowish, and has a pair of sinuous lateral bands of deeper hue and a pair of spots at a third of the distance from posterior end. Epigynum is covered with a chitinous arched plate leaving an opening posteriorly.

Average length :—Female, 9 mm.

Male, 8 mm.

Locality :—Common in Lahore.

## GENUS *MENEMERUS*.

1868. *Menemerus* Simon, Mon. des Attides, p. 662.
1892. *Tapinathus*, Thorell, Ann. Mus. Stor. nat. Genova, p. 306.
1901. *Menemerus* Simon, Hist. Nat. Araign., II, p. 611.

Cephalothorax low; cephalic region plain, slightly inclined anteriorly; anterior row of eyes straight, laterals separated from medians by a space, ocular quad broader by a quarter of its length, narrower posteriorly than thoracic region, eyes of second row midway between A.L. and eyes of third row; clypeus very narrow; legs IV longer than III; anterior legs stout, patella I long, tibia cylindrical with 3—3 spines, tibia II with 1—2 inferior stout spines, each anterior metatarsus with 2—2 spines; posterior legs spiny; sternum narrow in front; maxillary palps long, with white hair in female.

### 119. *MENEMERUS RAJI* SP. NOV.

(Pl. XVII, fig. 172).

Cephalothorax is uniformly olive brown in colour. Legs are dull white, pubescent.

Abdomen is long, ovate, and is nearly three times as long as wide; it is white in colour interspersed sparsely with red hair. Apical end of the dorsum has three brick red spots, which are sometimes black and arranged in the form of a triangle whose apex is directed posteriorly. Epigynal plate is circular and has a longitudinal slit in the middle.

Average length:—Female, 8·5 mm.

Localities:—Lawrence Gardens, Gol Bagh, Circular City Gardens.

## GENUS *SITTICUS*.

1901. *Sitticus* Simon, Hist. Nat. Araign., II, pp. 581-582.

Cephalothorax high; cephalic region with parallel sides or slightly attenuated in front, thoracic region longer by a third to quarter of its length than cephalic region, broader posteriorly, anteriorly somewhat depressed; anterior eyes in a straight or slightly recurved line, laterals narrowly spaced from medians; ocular quad much broader than long, with parallel sides, narrower posteriorly than thoracic region; eyes of second row midway between A.L. and eyes of third row; clypeus never narrower



than space between A.M., sternum very narrow anteriorly, narrower than base of labium; labium nearly circular; maxillary lobes comparatively short and broad; legs spiny, anterior tibiæ longer than patellæ, legs IV much longer than III.

### 120. *SITTICUS NIGER* SP. NOV.

Cephalothorax is uniformly black in colour. Ocular area is two-fifths of carapace. Eyes of anterior row are subcontiguous, medians are twice the size of laterals. Clypeus is one and a half times broader than the space between A.M. Sternum and legs are also uniformly black.

Abdomen is ovate, uniformly shining black, and is without any markings.

Average length:—Female, 3·5 mm.

Locality:—Gol Bagh.

## FAMILY THERAPHOSIDÆ.

Thoracic grooves always transverse; cheliceræ horizontal, without rastellum; eyes heterogeneous, compactly arranged; each tarsus with two claws only, claw-tufts present.

Abdomen with two pairs of lung books; posterior pair of spinnerets with long, dorsally bent, apical segments.

## GENUS *SELENOCOSMIA*.

1892. *Selenocosmia* Simon, Hist. Nat. Araign., II, p. 150.

Cephalic region highly convex, thoracic fovea procurved, semilunar; ocular tubercle convex, broader by a third of its length, anterior row of eyes procurved; legs robust, nearly free from spines; inner surface of maxillæ furnished with a series of claviform or bacilliform bristles; tarsal scopulæ of legs IV divided longitudinally.

### 121. *SELENOCOSMIA PRITAMI* SP. NOV.

Cephalothorax is oblong, convex, and is slightly higher in cephalic region. A.M. are smaller than A.L.; posterior row of

eyes is recurved; ocular quad is square. Chelicerae are very stout, without any rastellum or scopulæ; stridulating needles are long, setiform, hardly differentiated from oral fringe and are situated on the outer margin of chelicerae. Maxillary lobes are represented only by slightly broad palpal coxæ which are provided with thick scopulæ on their ventral surface, and a cluster of bacilliform hair on their inner ventral surface. Sternum is nearly circular and has angular projections between coxæ. Labium is nearly twice as long as broad and has parallel sides. Legs are I, IV, II, III, blackish brown, and are almost spineless, patellæ are provided with yellowish grey hair. Scopula of tarsus IV is longitudinally divided by a band of setæ.

Abdomen is oblong, narrower and shorter than thoracic region, blackish brown, and has two spinnerets only.

Length :—Male, 29 mm.

Locality :—The Mall.

This species is represented by a single male specimen caught on the Mall. This was the first and last catch of a Mygalomorph spider from Lahore.



## EXPLANATION OF TERMS USED.

| | |
|---|---|
| ABDOMEN | .. Part of the body behind pedicel. |
| ANAL TUBERCLE | .. Short conical process articulated with the posterior extremity of the abdomen immediately above the spinnerets, and bearing the anus at its tip. |
| BASE OF CORSELET | .. Posterior end of Cephalothorax. |
| BIPECTINATE CLAW | .. Superior claw which, in some spiders, bears a double row of teeth on its inner margin. |
| BOSS | .. Small chitinous piece situated at the extremity of the hollow of the chelicera. |
| BULB | .. Part of the copulatory organ of male situated in the alveolus of tarsus of palp. |
| CALAMISTRUM | .. An organ formed by bristles arranged in one or two rows on the fourth metatarsus in Cribellate spiders. |
| CAPUT | .. The anterior part of cephalothorax bounded behind by the cephalic grooves and bearing the eyes and chelicerae. |
| CEPHALIC GROOVES | .. The two anterior grooves enclosing and separating posteriorly the cephalic region from the thoracic region. |
| CEPHALIC REGION | .. Same as Caput. |
| CEPHALOTHORAX | .. The anterior region of the body formed by the fusion of caput and thorax. |
| CHELICERÆ | .. The first pair of appendages, situated below the frontal edge, each composed of tige and fang. |
| CHELICERAL GROOVE | .. The groove on the basal segment of chelicera in which the fang fits in the resting condition. |
| CLAW-TUFTS | .. Tufts of hair, situated immediately below the tarsal claw. |
| CLYPEUS | .. Part of the cephalothorax lying between the first row of eyes and base of chelicerae. |
| COLULUS | .. Small conical appendix situated between, or slightly in advance of, the anterior pair of spinnerets. |
| CORSELET | .. Same as Cephalothorax. |
| COXA | .. The first segment of each leg, and pedipalp. |
| CRIBELLUM | .. A chitinous plate situated between, or in advance of, the anterior pair of spinnerets in Cribellate spiders, either entire or transversely divided into two. |
| DIRECT EYES | .. Coloured eyes which are round and convex. |
| DIURNAL EYES | .. Same as direct eyes. |
| DORSUM | .. The dorsal surface of the abdomen. |
| EPIGYNUM | .. The external genital organ of the female spider. |
| EYES | .. Always simple, and eight or six in number arranged in two transverse rows and distinguished as *anterior medians, posterior medians, anterior laterals* and *posterior laterals.* |

FANG .. The terminal segment of each chelicera which may be straight or curved and pointed. A canal which is connected proximally to the poison gland runs through the fang at whose tip it opens.

FEMUR .. The third segment of the leg or pedipalp.

FOLIUM .. Dorsal markings in some genera of Argiopidæ and Theridiidæ.

HEAVY LEGS .. So called when the first pair of legs are stouter than the others.

HETEROGENEOUS CLAWS So called when the superior tarsal claws of a leg differ from each other in regard to pectination.

HETEROGENEOUS EYES A collective expression for diurnal and nocturnal eyes when occurring in the same spider.

HOMOGENEOUS CLAWS The two superior tarsal claws of a leg which are similar to each other.

HOMOGENEOUS EYES .. A term applied to diurnal or nocturnal eyes.

INDIRECT EYES .. Flat, colourless eyes of variable shape.

INFERIOR CLAW .. A median tarsal claw situated behind the superior claws.

LABIUM .. Anterior part of the sternum which may be *free* when separate from the base of the sternum or *soldered* when it is not separate from the latter.

MAXILLARY LOBE .. Dilatation of the basal part of the coxa of pedipalp.

MEDIAN LONGITUDINAL GROOVE OR FOSSA. A depression of variable shape in the middle of cephalothorax at the junction of the thoracic grooves.

METATARSUS .. The sixth segment of each leg.

MONOPECTINATE CLAW .. The tarsal claw bearing only a single row of teeth on its inferior margin.

NOCTURNAL EYES .. Same as indirect eyes.

OCULAR AREA .. The space occupied by the eyes, also known as *ocular quad* in the case of Attidæ where they form a quadrilateral.

OCULAR QUAD .. The area occupied by median eyes.

ONYCHIAL BRUSHES .. Tarsal comb-shaped hair found in *Scytodes* posterior to the tarsal claws.

ONYCHIUM .. Small terminal segment of the leg present in some spiders supporting the tarsal claws.

PALPAL ORGAN .. Copulatory organ of the male spider situated in the palpal tarsus consisting of *hæmatodocha, bulb, ejaculatory duct* and *style.*

PEDIPALP .. Second appendage of the cephalothorax consisting of six segments, *coxa, trochanter, femur, tibia* and *tarsus.*

PROCURVED EYES .. Eyes arranged in a curved row with the concavity in front.

PROMARGIN .. The outer margin of the cheliceral groove.

RASTELLUM .. A group of stout teeth situated at the extremity of chelicerae in burrowing Avicularinæ.



RECURVED EYES .. Eyes arranged in a curved row with the concavity behind.

RETROMARGIN .. Inner margin of cheliceral groove.

SCAPE .. Transverse cover, in the form of a brim, elevated from the inferior edge of the genital orifice of female and possessing crochet which may be straight or bent in the family Argiopidæ.

SCOPULA (CHELICERAL) A group of stiff hair, finely barbed, occurring on the promargin of chelicera in many spiders.

SCOPULA (MAXILLARY) .. An extensive hairy area situated on the inferior surface of maxillary lobe near its inner border.

SCOPULA (TARSAL) .. A group of hair occurring on the inferior surface of tarsus and sometimes on metatarsus also in many spiders.

SERRULA .. A row of slender pointed teeth on the inferior surface of the maxillary lobe along its external border.

SMOOTH CLAW .. Inferior tarsal claw without teeth.

SPIGOT .. A large, conical tube at the extremity of spinneret for the passage of liquid silk. Spigots are constant in number and position.

SPINNERETS .. Cylindrical or conical processes of the abdomen grouped beneath the anus and secreting the spider-silk. They are normally six in number arranged in three pairs, and are known as *anterior, median* and *posterior* according to the position they occupy.

SPOOL .. A small, cylindrical or conical tube at the extremity of spinneret for the passage of liquid silk. Spools are irregularly distributed at the distal end of the spinnerets.

SUPERIOR CLAWS .. A pair of claws situated at the apex of the tarsus of each leg, either pectinate or smooth.

SPURIOUS CLAWS .. Very stout hair, pectinate and placed internal to the tarsal claws in the families Argiopidæ and Theridiidæ.

STERNUM .. Chitinous covering of the ventral side of the cephalothorax.

STYLE .. Fine erectile part of the ejaculatory duct of the male.

TARSUS .. Terminal segment of each leg and pedipalp.

THORACIC REGION .. Posterior part of the cephalothorax situated behind the cephalic grooves.

THORACIC GROOVES .. Oblique and divergent grooves of the thoracic region.

TIBIA .. Fifth segment of each leg and pedipalp.

TROCHANTER .. Second segment of each leg and pedipalp.

VENTER .. Ventral surface of the abdomen.

VULVA .. Genital opening of female.

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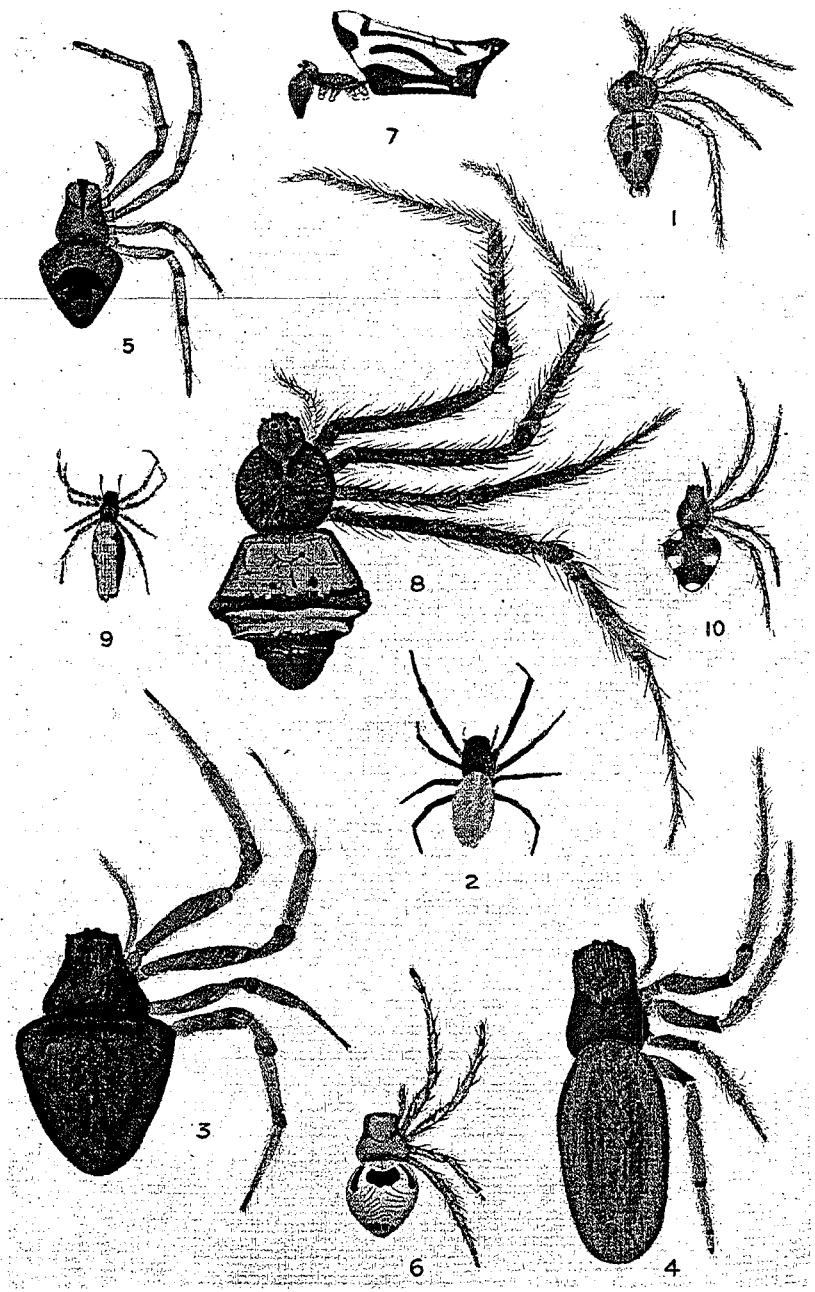
## PLATE XI.

Fig. 1. *Uroctea Matthai* sp. novo, ♀. × 4.
Fig. 2. *Stegodyphus pacificus* Pocock, ♀. × 1.
Fig. 3. *Araneus umbratica* (Clerk), ♀. × 3.
Fig. 4. *Araneus fulvus* sp. novo, ♀. × 4.
Fig. 5. *Araneus formosus* sp. novo, ♀. × 2.
Fig. 6. *Zilla Nawazi* sp. novo, ♀. × 2.
Fig. 7. *Leucauge decorata* (Blackwall), lateral view, ♀. × 4.
Fig. 8. *Argiope pulchella* Thorell, ♀. × 3.
Fig. 9. *Cyclosa confraga* (Thorell), ♀. × 4.
Fig. 10. *Trigonobothrys aheneus* sp. novo, ♀. ×5.



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## PLATE XII.

Fig. 11. Cheliceræ of *Uroctea Matthaii*, sp. novo, ♀. × 21.

Fig. 12. Labium and pedipalp of *Uroctea Matthaii* sp. novo, ♀. × 21.

Fig. 13. Palp of *Uroctea Matthaii* sp. novo, ♂. × 21.

Fig. 14. Anal tubercle and spinnerets of *Uroctea Matthaii* sp. novo, ♀. × 21.

Fig. 15. Epigynum of *Uroctea Matthaii* sp. novo, ♀. × 21.

Fig. 16. Apical end of tarsus of *Uroctea Matthai* sp. novo, ♀. × 90.

Fig. 17. Tarsus of *Uroctea Matthaii* sp. novo, showing the arrangement of spines and hair, ♀. × 21.

Fig. 18. Cheliceræ of *Hersilia savignyi* Lucas, ♀. × 10.

Fig. 19. Labium and pedipalp of *Hersilia savignyi* Lucas (Ventral view), ♀. × 8.

Fig. 20. Anal Tubercle and spinnerets of *Hersilia savignyi* Lucas, ♀. × 8.

Fig. 21. Apical end of tarsus of *Hersila savignyi* Lucas, ♀. × 34.

Fig. 22. Cheliceræ of *Stegodyphus sarsinorum* Karsch, ♀. × 8.

Fig. 23. Labium and pedipal of *Stegodyphus sarsinorum* Karsch, ♀. × 8.

Fig. 24. Metatarsus IV of *Stegodyphus sarsinorum* Karsch, showing calamistrum, ♀. × 8.

Fig. 25. Cribellum, spinnerets and anal tubercle of *Stegodyphus sarsinorum* Karsch, ♀. × 10.

Fig. 26. Epigynum of *Stegodyphus sarsinorum* Karsch, ♀. × 8.

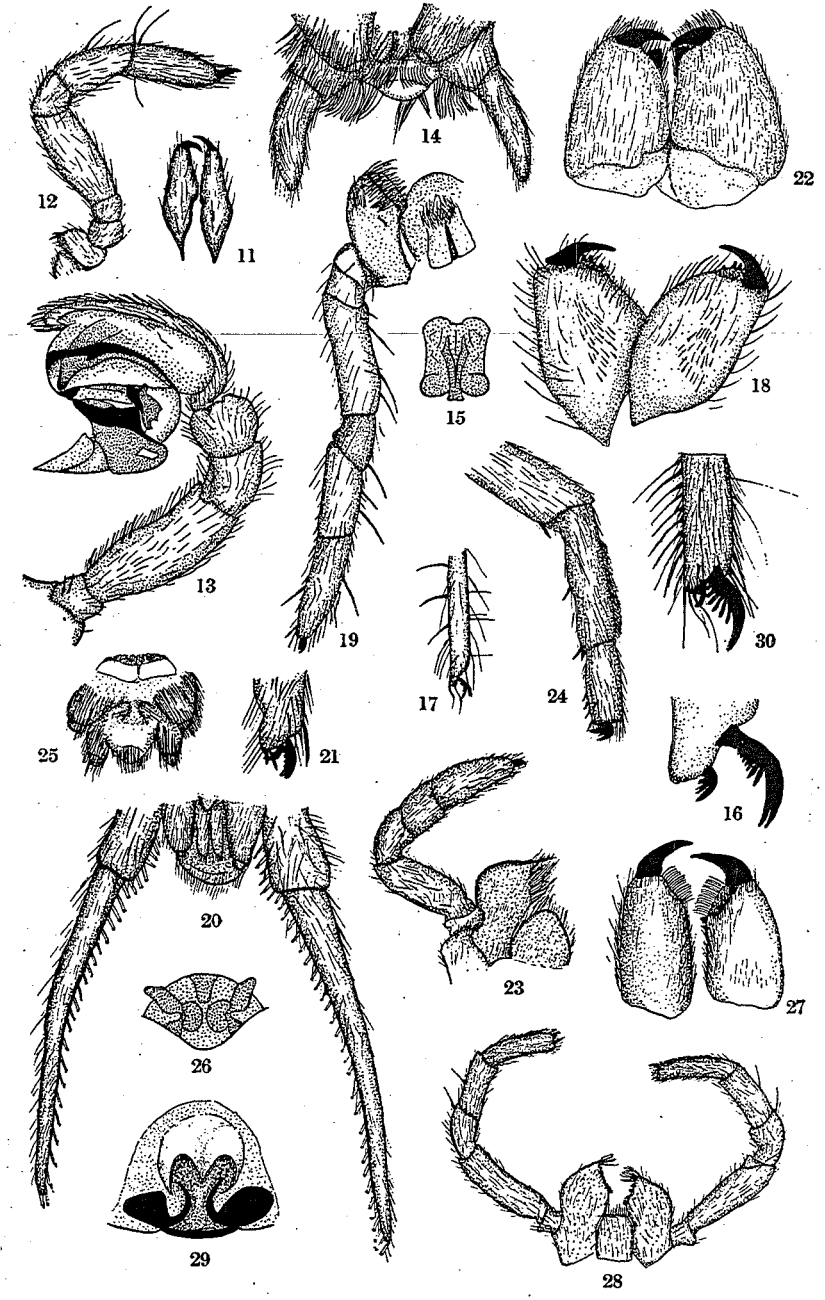
Fig. 27. Left chelicera of *Lycosa chaperi* Simon (dorsal and ventral views), ♀. × 8.

Fig. 28. Maxillary palps and labium of *Lycosa chaperi* Simon, ♀. × 8.

Fig. 29. Epigynum of *Lycosa chaperi* Simon, ♀. × 21.

Fig. 30. Tarsus of *Lycosa chaperi* Simon, showing scopula, ♀. × 21.



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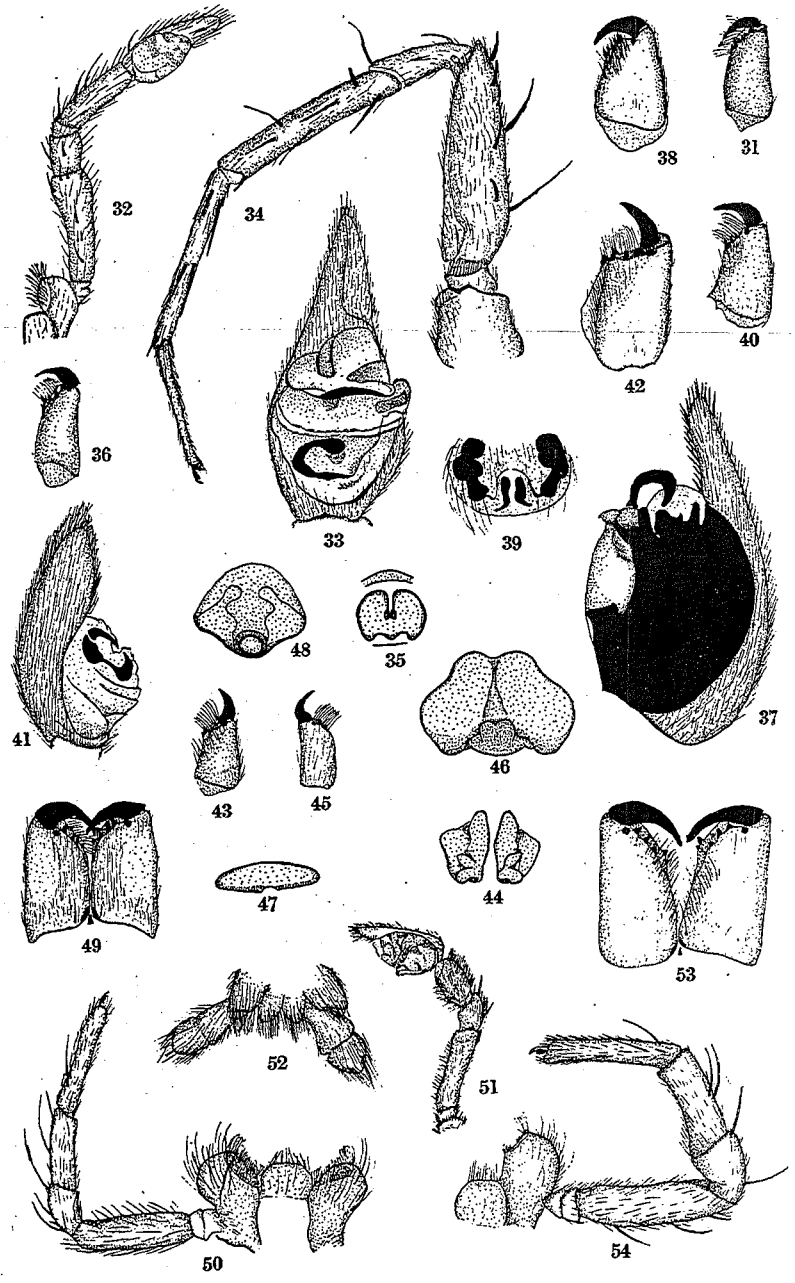
## PLATE XIII.

Fig. 31. Chelicera of *Lycosa Basiri* (retromarginal view) sp. novo, ♀. × 8.
Fig. 32. Labium and pedipalp of *Lycosa Basiri*, sp. novo, ♂. × 8.
Fig. 33. Palpal tarsus of *Lycosa Basiri*, sp. novo, showing copulatory organ, ♂. × 21.
Fig. 34. Leg I of *Lycosa Basiri*, sp. novo, ♀. × 8.
Fig. 35. Epigynum of *Lycosa Basiri*, sp. novo, ♀. × 9.
Fig. 36. Chelicera of *Lycosa birmanica* Thorell, ♀. × 8.
Fig. 37. Palpal tarsus of *Lycosa birmanica* Thorell, ♂. × 21.
Fig. 38. Chelicera of *Lycosa mackenziei* Gravely, ♀. × 8.
Fig. 39. Epigynum of *Lycosa mackenziei* Gravely, ♀. × 21.
Fig. 40. Chelicera of *Lycosa Arorai*, sp. novo, ♂. × 8.
Fig. 41. Palpal tarsus of *Lycosa Arorai*, sp. novo, ♂. × 21.
Fig. 42. Chelicera of *Lycosa kempi* Gravely, ♀. × 8.
Fig. 43. Chelicera of *Pardosa lahorensis*, sp. novo, ♀. × 8.
Fig. 44. Epigynum of *Pardosa lahorensis*, sp. novo, ♀. × 16.
Fig. 45. Chelicera of *Pardosa Mulani*, sp. novo, ♀. × 8.
Fig. 46. Epigynum of *Pardosa Mulani*, sp. novo, ♀. × 16.
Fig. 47. Epigynum of *Ocyale Kumari*, sp. novo. ♀. × 8.
Fig. 48. Epignum of *Hippasa pisaurina* Pocock, ♀. × 16.
Fig. 49. Cheliceræ of *Hippasa aglenoides* (Simon), ♀. × 8.
Fig. 50. Labium and pedipalp of *Hippasa aglenoides* (Simon), ♀. × 8.
Fig. 51. Maxillary palp of *Hippasa aglenoides* (Simon), ♂. × 8.
Fig. 52. Spinnerets of *Hippasa aglenoides* (Simon), ♀. × 8.
Fig. 53. Cheliceræ of *Anomalomma Harishi*, sp. novo, ♀. × 8.
Fig. 54. Labium and pedipalp of *Anomalomma Harishi*, sp. novo. ♀. × 8.



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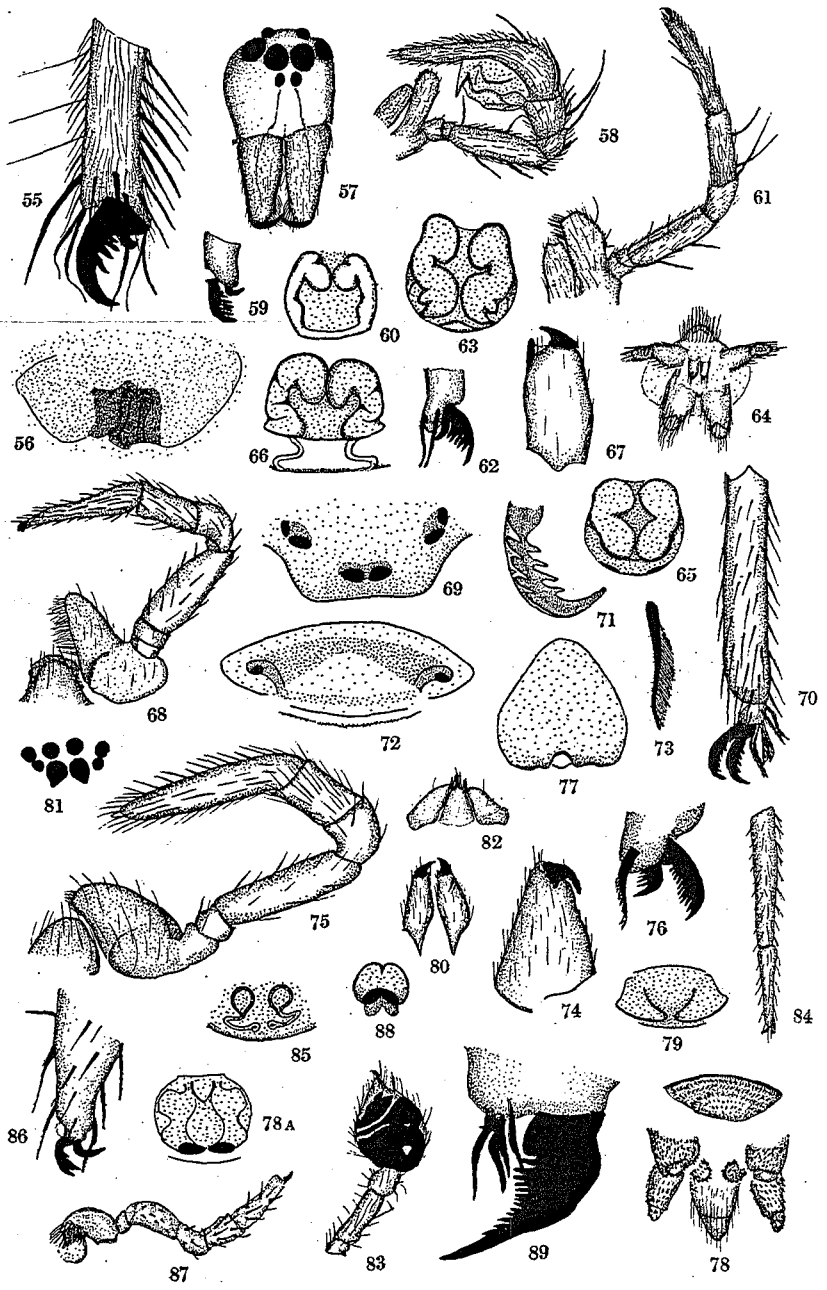
## PLATE XIV.

Fig. 55. Tarsus of *Anomalomma Harishi*, sp. novo, ♀. × 8.
Fig. 56. Epigynum of *Anomalomma Harishi*, sp. novo, ♀. × 21.
Fig. 57. Frontal and cheliceræ of *Oxyopes wroughtoni* Pocock, ♀. × 8.
Fig. 58. Labium and pedipalp of *Oxyopes wroughtoni* Pocock, ♂. × 8.
Fig. 59. Tarsal claws of *Oxyopes wroughtoni* Pocock, ♀. × 21.
Fig. 60. Epigynum of *Oxyopes wroughtoni* Pocock, ♀. × 16.
Fig. 61. Labium and pedipalp of *Oxyopes rufisternis*, Pocock, ♀. × 8.
Fig. 62. Tarsal claws of *Oxyopes rufisternis* Pocock, ♀. × 21.
Fig. 63. Epigynum of *Oxyopes rufisternis* Pocock, ♀. × 16.
Fig. 64. Spinnerets of *Oxyopes rufisternis* Pocock, ♀. × 8.
Fig. 65. Epigynum of *Oxyopes ryvesii* Pocock ♀. × 16.
Fig. 66. Epigynum of *Oxyopes hindostanicus* Pocock, ♀. × 16.
Fig. 67. Chelicera of *Scytodes propinqua* Stoliczka, ♀. × 21.
Fig. 68. Labium and pedipalp of *Scytodes thoracica* (Latreille), ♀. × 10.
Fig. 69. Eyes of *Scytodes thoracica* (Latreille), ♀. × 10.
Fig. 70. Tarsus of *Scytodes thoracica* (Latreille), showing onychium, onychial brushes and claws, ♀. × 10.
Fig. 71. Bipectinate tarsal claw of *Scytodes thoracica* (Latreille), ♀. × 90.
Fig. 72. Epigynum of *Scytodes thoracica* (Latreille), ♀. × 33.
Fig. 73. An onychial brush of *Scytodes thoracica* (Latreille), ♀. × 90.
Fig. 74. Chelicera of *Altella conglobata*, sp. novo, ♀. × 33.
Fig. 75. Labium and pedipalp of *Altella conglobata*, sp. novo, ♀. × 33.
Fig. 76. Tarsal claw of *Altella conglobata*, sp. novo, ♀. × 33.
Fig. 77. Epigynum of *Thomisus tuberculata* sp. novo, ♀. × 33.
Fig. 78. Cribellum and spinnerets of *Altella, conglobata* sp. novo, ♀. × 33.
Fig. 78a. Epigynum of *Altella conglobata*, sp. novo, ♀. × 20.
Fig. 79. Epigynum of *Dictyna albida* Cambridge, ♀. × 20.
Fig. 80. Cheliceræ of *Spintharus argenteus*, sp. novo, ♀. × 21.
Fig. 81. Eyes of *Spintharus argenteus*, sp. novo, ♀. × 21.
Fig. 82. Labium and maxillary lobes of *Spintharus argenteus*, sp. novo, ♀. × 21.
Fig. 83. Palp of *Spintharis argenteus*, sp. novo, ♂. × 21.
Fig. 84. Metatarsus and tarsus IV of *Spintharus argenteus*, sp. novo, ♀. × 21.
Fig. 85. Epigynum of *Spintharus argenteus*, sp. novo, ♀. × 16.
Fig. 86. Apical end of tarsus of *Achæa quadripunctata* Simon, ♀. × 21.
Fig. 87. Labium and pedipal of *Trigonobothrys aheneus*, sp. novo, ♀. × 21
Fig. 88. Epigynum of *Trigonobothrys aheneus*, sp. novo, ♀. × 21.
Fig. 89. Tarsal claw of *Ariamnes flagellum* (Dolseschall), ♀. × 90.



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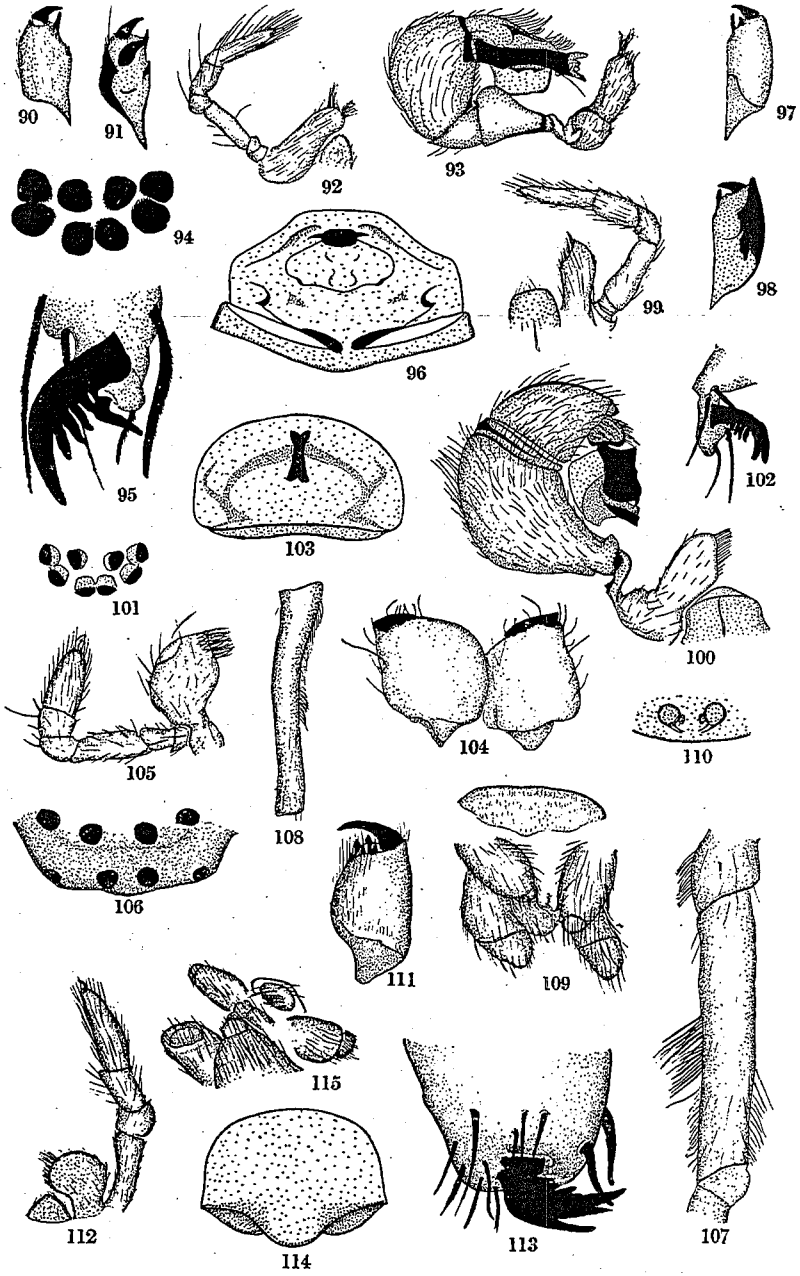
SPIDERS

## PLATE XV.

Fig. 90. Chelicera of *Crossopriza lyoni* (Blackwall), ♀. × 10.
Fig. 91. Chelicera of *Crossopriza lyoni* (Blackwall), ♂. × 10.
Fig. 92. Labium and pedipalp of *Crossopriza lyoni* (Blackwall), ♀. × 10.
Fig. 93. Pedipalp of *Crossopriza lyoni* (Blackwall), ♂. × 10.
Fig. 94. Eyes of *Crossopriza lyoni* (Blackwall), ♀. × 21.
Fig. 95. Tarsal claws of *Crossopriza lyoni* (Blackwall), ♀. × 74.
Fig. 96. Epigynum of *Crossopriza lyoni* (Blackwall), ♀. × 21.
Fig. 97. Chelicera of *Artema atlanta* Walckenær, ♀. × 8.
Fig. 98. Chelicera of *Artema atlanta* Walckenær, ♂. × 8.
Fig. 99. Labium and pedipalp of *Artema atlanta* Walckenær, ♀. × 8.
Fig. 100. Labium and pedipalp of *Artema atlanta* Walckenær, ♂. × 8.
Fig. 101. Eyes of *Artema atlanta* Walckenær, ♀. × 8.
Fig. 102. Tarsal claws of *Artema atlanta* Walckenær, ♀. × 21.
Fig. 103. Epigynum of *Artema atlanta* Walckenær, ♀. × 10.
Fig. 104. Cheliceræ of *Uloborus plumipes* Lucas, ♀. × 21.
Fig. 105. Pedipalp of *Uloborus plumipes* Lucas, ♀. × 21.
Fig. 106. Eyes of *Uloborus plumipes* Lucas, ♀. × 21.
Fig. 107. Tibia I of *Uloborus plumipes* Lucas, showing, tibial spurs, ♀. × 21.
Fig. 108. Metatarsus IV of *Uloborus plumipes* Lucas, showing calamistrum, ♀. × 21.
Fig. 109. Cribellum and spinnerets of *Uloborus plumipes* Lucas, ♀. × 21.
Fig. 110. Epigynum of *Uloborus plumipes* Lucas, ♀. × 16.
Fig. 111. Chelicera of *Cyrtophora citricola* (Forskal), ♀. × 10.
Fig. 112. Labium and pedipalp of *Cyrtophora citricola* (Forskal) ♀. × 8.
Fig. 113. Tarsal claws of *Cyrtophora citricola* (Forskal) ♀. × 33.
Fig. 114. Epigynum of *Cyrtophora citricola* (Forskal), ♀. × 21.
Fig. 115. Spinnerets of *Cyrtophora citricola* (Forskal), ♀. ×10.



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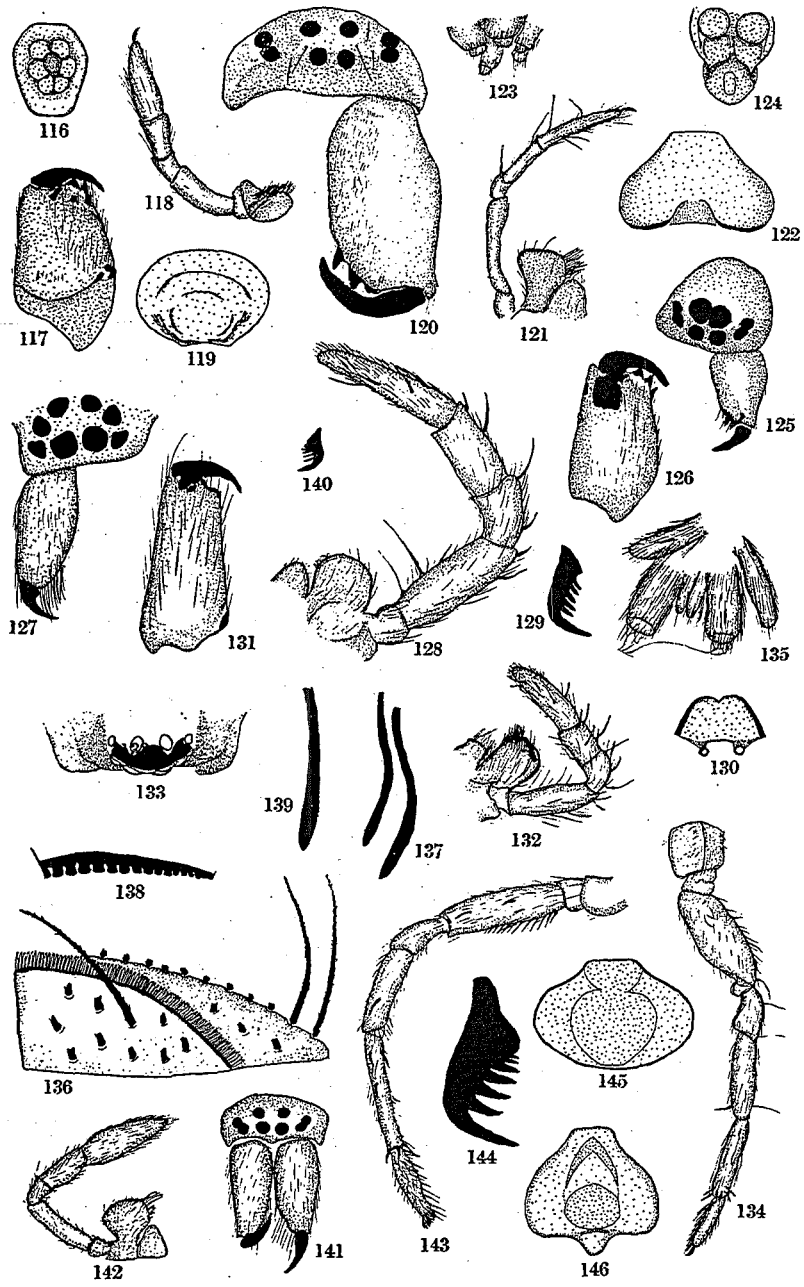
SPIDERS

## PLATE XVI.

Fig. 116. Epigynum of *Araneus excelsus* (Simon), ♀. × 16.
Fig. 117. Chelicera of *Cyclosa confraga* (Thorell), ♀. × 10.
Fig. 118. Pedipalp of *Cyclosa confraga* (Thorell), ventral view, ♀. × 10.
Fig. 119. Epigynum of *Cyclosa confraga* (Thorell), ♀. × 21.
Fig. 120. Chelicera and eyes of *Leucauge decorata* (Black.), ♀. × 10.
Fig. 121. Labium and pedipalp of *Leucauge decorata* (Black.), ♀. × 8.
Fig. 122. Epigynum of *Leucauge decorata* (Black.), ♀. × 21.
Fig. 123. Spinnerets of *Leucauge decorata* (Black.), ♀. × 21.
Fig. 124. Epigynum of *Zilla Nawazi*, sp. novo, ♀. × 16.
Fig. 125. Chelicera and eyes of *Araneus melanocrania* (Thorell), ♀. × 21.
Fig. 126. Chelicera of *Araneus pavidus* Simon, ♀. × 21.
Fig. 127. Chelicera and eyes of *Zimiris indica* Simon, ♀. × 10.
Fig. 128. Labium and pedipalp of *Zimris indica* Simon, ♀. × 10.
Fig. 129. Tarsal claws of *Zimiris indica* Simon, ♀. × 33.
Fig. 130. Epigynum of *Zimris Indica* Simon, ♀. × 16.
Fig. 131. Chelicera of *Gnaphosa lucifuga* Latreille, ♀. × 21.
Fig. 132. Labium and pedipalp of *Gnaphosa lucifuga* Latreille, ♀. × 21.
Fig. 133. Eyes of *Gnaphosa lucifuga* Latreille, ♀. × 10.
Fig. 134. Leg I of *Gnaphosa lucifuga*, Lagtreille, ♀. × 8.
Fig. 135. Spinnerets of *Gnaphosa lucifuga* Latreille, ♀. × 10.
Fig. 136. A part of maxillary lobe of *Gnaphosa lucifuga* Latreille, showing the inferior serrula, ♀. × 150.
Fig. 137. Spathulate hair of maxillary scopula of *Gnaphosa lucifuga* Latreille, ♀. × 150.
Fig. 138. Serrula on the fang of *Gnaphosa lucifuga* Latreille, ♀. × 150.
Fig. 139. Tarsal scopular hair of *Gnaphosa lucifuga* Latreille, ♀. × 150.
Fig. 140. Tarsal claw of *Gnaphosa lucifuga* Latreille, ♀. × 33.
Fig. 141. Chelicerae and eyes of *Thelcticopis telonotata*, sp. novo, ♀. × 10.
Fig. 142. Labium and pedipalp of *Thelcticopis telonotata*, sp. novo, ♀. × 10.
Fig. 143. Leg I of *Thelcticopis telonotata*, sp. novo, ♀. × 8.
Fig. 144. Tarsal claw of *Thelcticopis telonotata*, sp. novo, ♀. × 33.
Fig. 145. Epigynum of *Thelcticopis telonotata*, sp. novo, ♀. × 8.
Fig. 146. Epigynum of *Thelcticopis ancorum* sp. novo, ♀. × 8.



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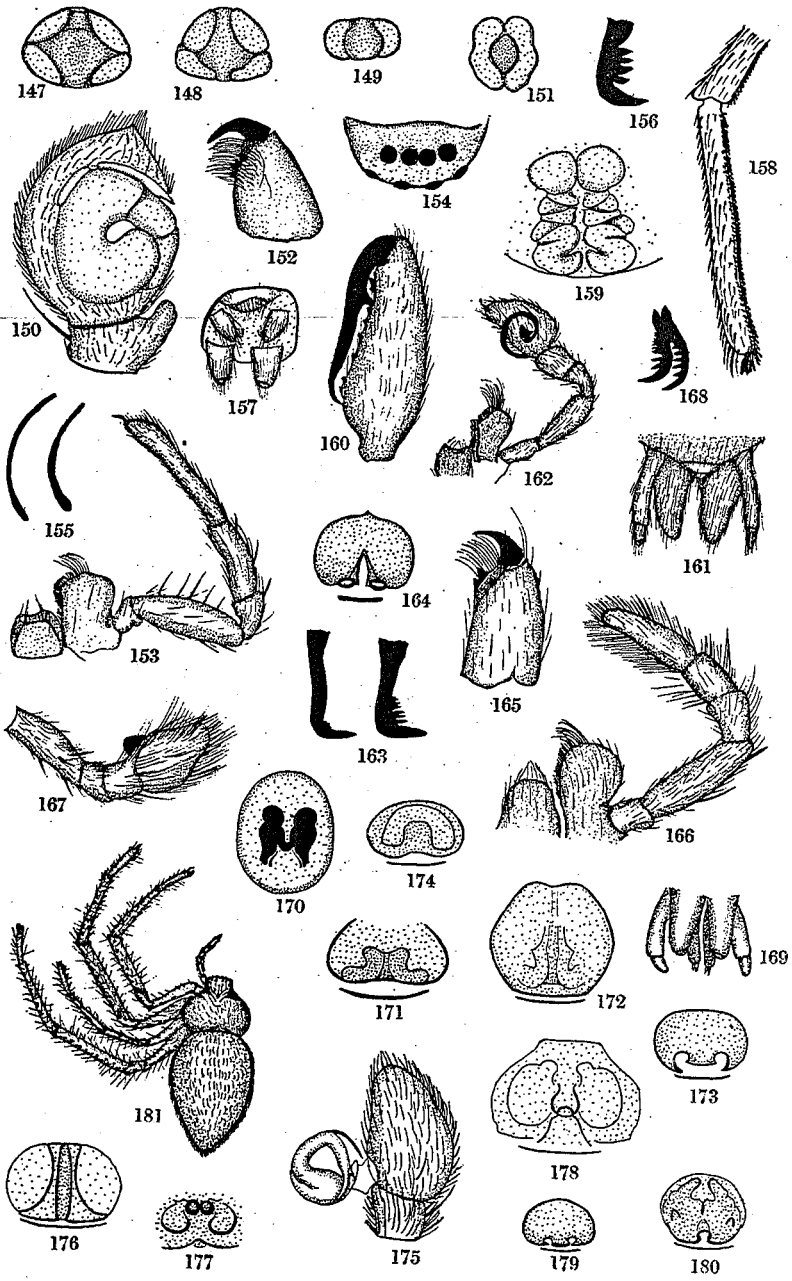
## PLATE XVII.

Fig. 147. Epigynum of *Eusparassus flavidus* Cambridge, ♀. × 8.
Fig. 148. Epigynum of *Olios lutescens* (Thorell), ♀. × 8.
Fig. 149. Epigynum of *Olios punjabensis*, sp. novo, ♀. × 8.
Fig. 150. Palpal organ of *Dicæa terrena*, sp. novo, ♀. × 16.
Fig. 151. Epigynum of *Strotarchus vittatus*, sp. novo, ♀. × 13.
Fig. 152. Chelicera of *Lausus properus*, sp. novo, ♀. × 10.
Fig. 153. Labium and pedipalp of *Lausus properus*, sp. novo, ♀. × 10.
Fig. 154. Eyes of *Lausus properus*, sp. novo, ♀. × 90.
Fig. 155. Tarsal claw-tuft of *Lausus properus*, sp. novo, ♀. × 90.
Fig. 156. Tarsal claw of *Lausus properus*, sp. novo, ♀. × 21.
Fig. 157. Spinnerets of *Lausus properus*, sp. novo, ♀. × 21.
Fig. 158. Metatarsus IV of *Lausus properus*, sp. novo, showing the scopula, ♀. × 21.
Fig. 159. Epigynum of *Lausus properus* sp. novo, ♀. × 21.
Fig. 160. Chelicera of *Myrmarachne lætus* (Thorell), ♀. × 10.
Fig. 161. Spinnerets of *Myrmarachne lætus* (Thorell), ♀. × 34.
Fig. 162. Labium and pedipalp of *Myrmarachne lætus* (Thorell), ♂. × 10.
Fig. 163. Tarsal claws of *Myrmarachne lætus* (Thorell), ♀. × 90.
Fig. 164. Epigynum of *Myrmarachne lætus* (Thorell), ♀. × 64.
Fig. 165. Chelicera of *Plexippus paykulli* (Audouin), ♀. × 8.
Fig. 166. Labium and pedipalp of *Plexippus paykulli* (Audouin), ♀. × 8.
Fig. 167. Palpal organ of *Plexippus paykulli* (Audouin), ♂. × 8.
Fig. 168. Tarsal claws of *Plexippus paykulli* (Audouin), ♀. × 21.
Fig. 169. Spinnerets of *Plexippus paykulli* (Audouin), ♀. × 8.
Fig. 170. Epigynum of *Plexippus paykulli* (Audouin), ♀. × 10.
Fig. 171. Epigynum of *Habrocestum algericum* Dalmas, ♀. × 64.
Fig. 172. Epigynum of *Menemerus Raji*, sp. novo, ♀. × 16.
Fig. 173. Epigynum of *Bellota fascialis*, sp. novo, ♀. × 16.
Fig. 174. Epigynum of *Bellota livida*, sp. novo, ♀. × 16.
Fig. 175. Palpal organ of *Bellota livida*, sp. novo, ♂. × 16.
Fig. 176. Epigynum of *Thiania demissa* Simon, ♀. × 16.
Fig. 177. Epigynum of *Thiania aura*, sp. novo, ♀. × 18.
Fig. 178. Epigynum of *Hyctia fornicis*, sp. novo, ♀. × 16.
Fig. 179. Epigynum of *Chrysilla albens*, sp. novo, ♀. × 16.
Fig. 180. Epigynum of *Evophrys trifasciata* Koch, ♀. × 16.
Fig. 181. *Olio punjabensis*, sp. novo, ♀. × 4/3.



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# MAP OF LAHORE.